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SUMARIO:

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SECRETARIO GENERAL Y DE REDACCION:

SALOMON REINOSO A., M. D.

APARTADO NACIONAL 700 (2)

BOGOTA - COLOMBIA

IMPRESO EN CANAL RAMIREZ — ANTARES BOGOTA - COLOMBIA

SOCIEDAD AMERICANA

DE

OFTALMOLOGIA Y OPTOMETRIA

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MODIFICATIONS OF A SIMPLIFIED OPERATION FOR MINIMAL PTOSIS

BY

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In 1961 Fasanella and Servat described "Levator Resection for Minimal Ptosis - Another Simplified Operation". Figures 1-7 are taken from the original article. Since that time there has evolved broader indications for this operation. In addition, a modification of the original suture has resulted in a reduction of a painful keratitis caused by the suture knots originally described. This operation has been now used widely and recently Crowell Beard wrote, "While I don't agree with you the mechanics, I think that your operation is the greatest thing that has happened to ptosis" [1].

In an article entitled "Surgical Treatment of Blepharoptosis - A Quantitative Approach" [2], Dr. Beard continued to say that "this is the simplest of logical ptosis operations. Its results are predictable, with a high degree of accuracy and are so constant that the procedure is regarded as excellent for congenital ptosis of 2 mm. or less and for certain cases of acquired ptosis. The original suture placement has been modified. 5-0 or 6-0 plain catgut has been found to be adequate. As the tarsus and other tissues are excised, a few mms. at a time an arm of double arm suture is carried from one epithelial side to the other in serpentine fashion. (Fig. 8 and 9). In this way Mueller's muscle is prevented from retracting. The same suture is then carried in a running fashion back to its

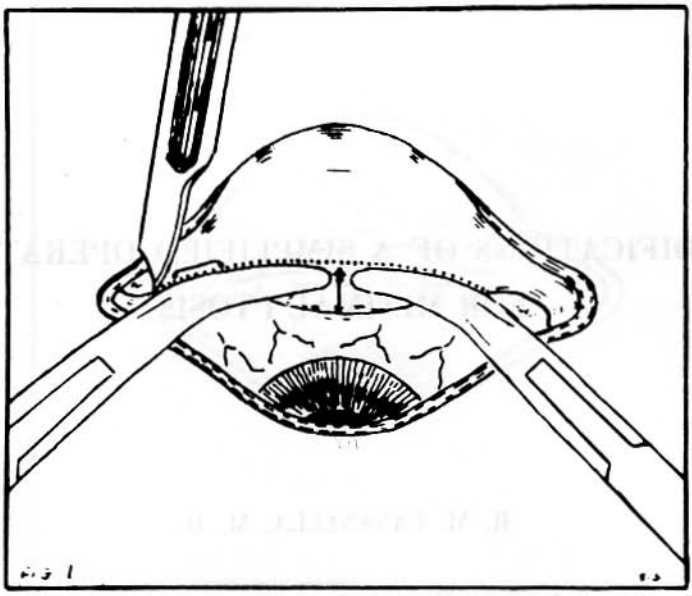
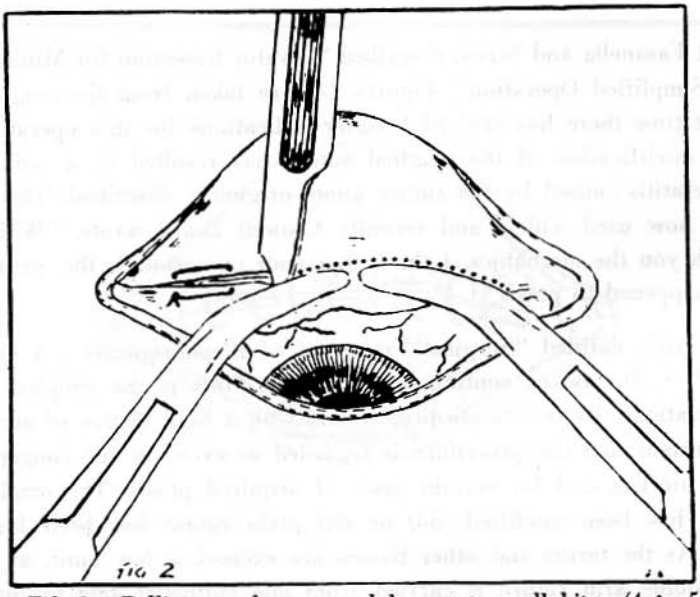


Fig. 1. The lid is everted and 2 curved hemostats are placed grasping conjuntiva, tarsus, levator and Muller's muscle.



Fif. 2. Pulling up the temporal hemostat, small bites (4 to 5 mm.) are taken and at the same time mattress satures are carefully and firmly placed wtih the knot distal to the cornea in the normal position.

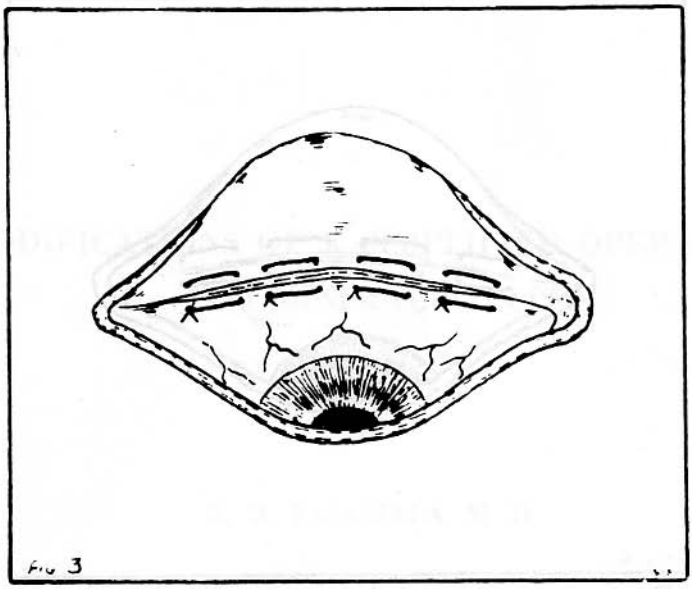


Fig. 3. Appearance of 4 mattress sutures in place before lid is reeverted to its normal position. To avoid injury to the cornea the two central knots and all knots should be placed as far temporally and nasally as possible. More recently I have brought the central sutures up through the incision and tied them on the skin surface over rubber dams. The structures held by the hemostats have been sacrificed.

point of origin as a reinforcement and both arms of the suture are carried out through the skin and tied. (Fig. 9). No knots touch the cornea. The first few cases in a series were done according to the original technic and a temporary but painful keratitis was caused by the suture knots. This has been avoided by the use of the described suture placement. Frost sutures are not necessary. In children a patch is used for two or three days but in adults the eye is often left unpatched".

For those who want to continue to use interrupted sutures, rather than a continuous, I have again recommended that all the sutures should be placed so that the knots in the final position of the lids should lie as far away from the limbus as possible. However the two central of the four sutures are brought through the wound edge outward toward the skin and tied with or without a small

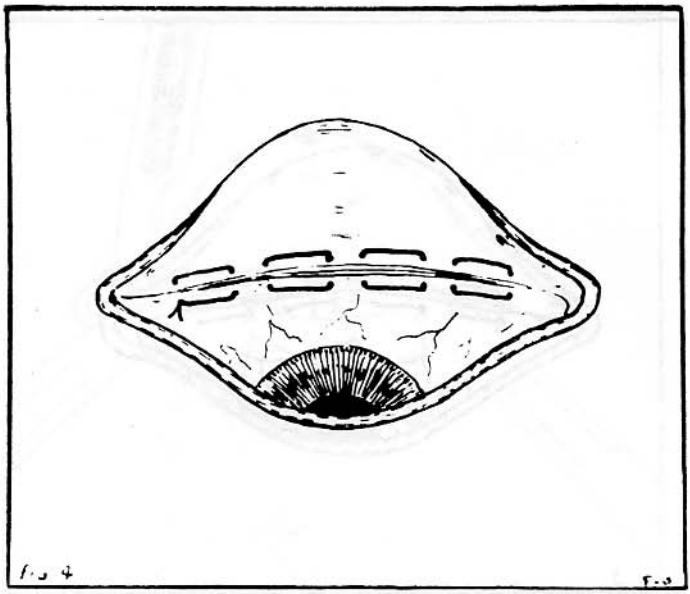


Fig. 4. An alternate method of suturing with only one knot placed temporally.

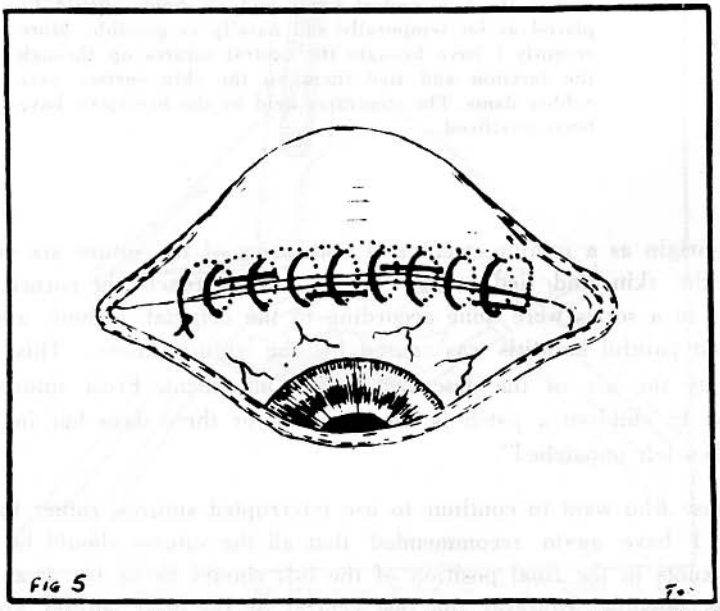


Fig. 5. Still another method of suturing again with one final knot in the temporal side.

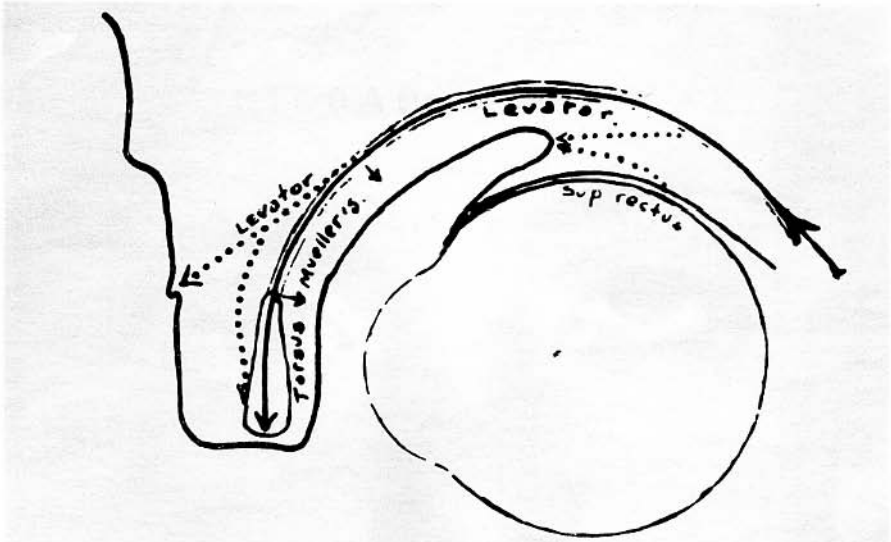


Fig. 6. Diagramatic sketch demostrating how the 3 main insertions of the levator and how Muller's muscle and the levator and tarsus may function as a unit.

piece of rubber dam. In addition for further protection the central knots should be moved to the extreme nasal and temporal side. In this fashion there is little if any chance of the sutures rubbing against the cornea. On one occasion, I received a call from the mid-west because of central sutures which had been placed with the knots lying towards the limbus causing a keratitis. I recommended in that case that a doughnut-shaped contact lens should be worn until the fifth day and then the sutures were to be removed.

Beard recommends this operation for the following various types of congenital and acquired ptosis:

A. *Congenital Ptosis*

1. Bilateral congenital ptosis
   a. Mild (1.5 to 2 mm.)
2. Mild unilateral congenital ptosis where there is good levator function.

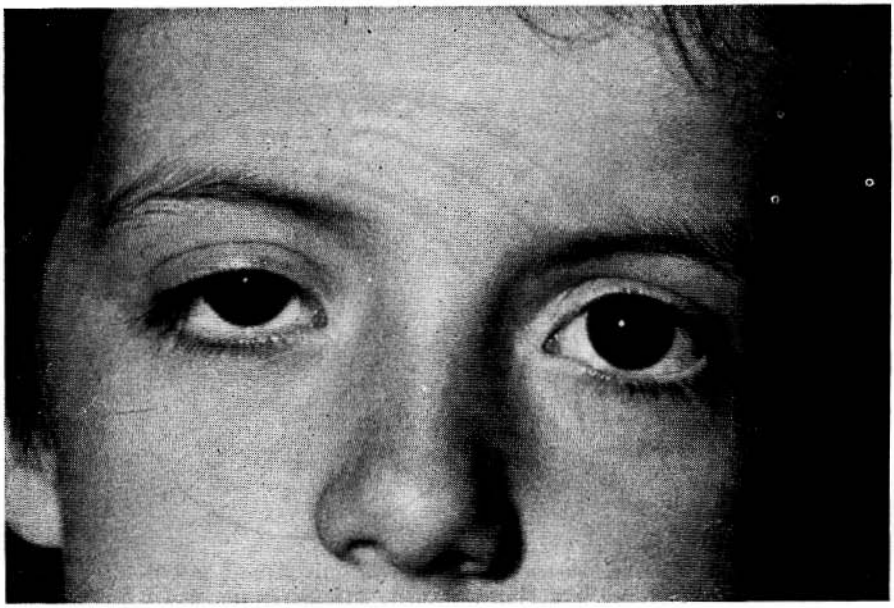


Fig. 7. A. Preoperative appearance of ptosis in right eye. Note prescence of some lid fold.

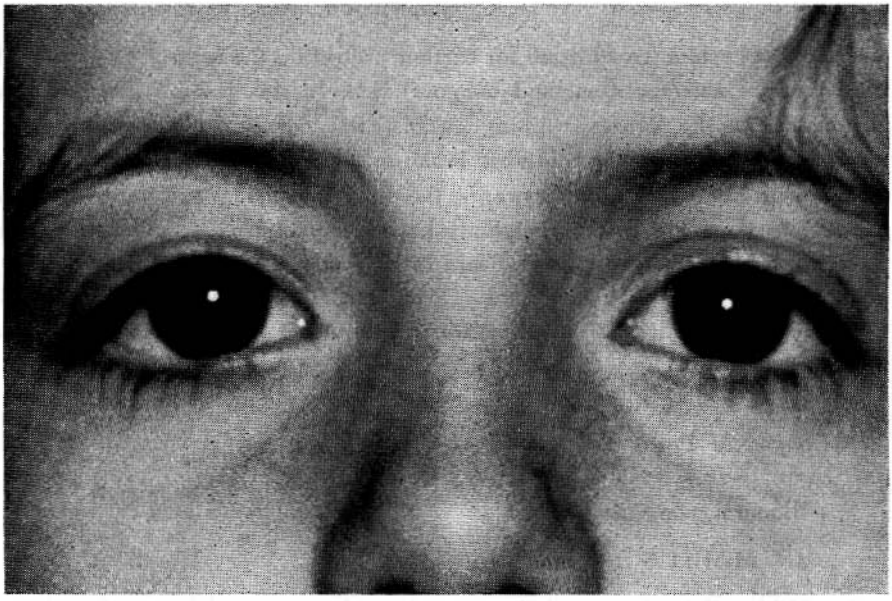


Fig. 7. B. Postoperative picture of ptosis repair.

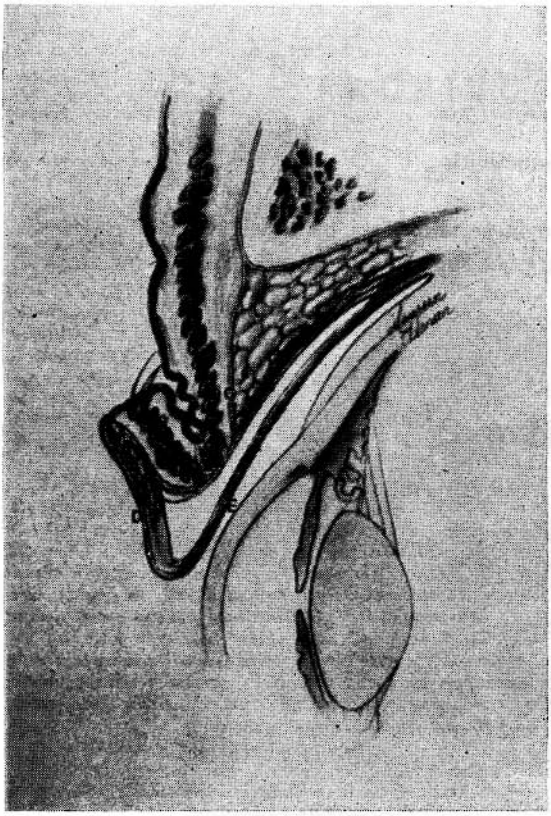


Fig. 8. Cross-section showing anatomical relation of the everted eyelid; A, conjunctiva and Muller's muscle; B, levator aponeurosis; C, orbital septum; D, and E, position of jaws of hemostat in Fasanella-Servat procedure. (Beard, Crowel: The surgical treatment of blepharoptosis: A quantitative approach. Trans. Amer. Ophth. Soc. 64:1966).

B. *Acquired Ptosis*

1. Neurogenic
   a. Following certain disease processes
   b. Horner's syndrome
2. Myogenic
   a. Senile ptosis
   b. Late acquired hereditary ptosis
3. Traumatic

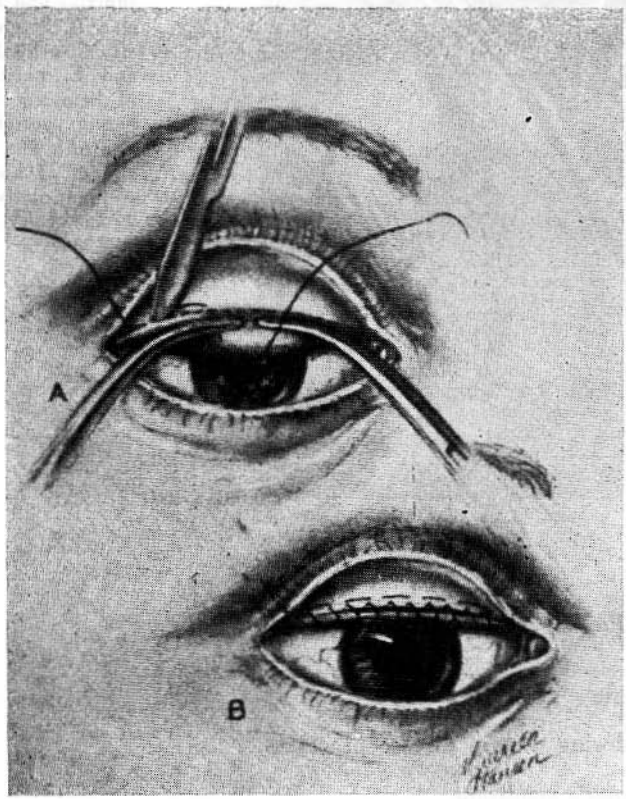
a. Post-enucleation (mild)

b. Following orbital surgery

4. Mechanical

a. Following treated conjunctivitis

Callahan has used this operation in certain cases of undercorrected ptosis. He prefers lacing a monofilament suture (as supramid extra 6-0 *) back and forth to



Fifg. 9. Modified placement of sutures for Fasanella-Servat procedure. (Beard, Crowell: The surgical treatment of blepharoptosis: A quantitative approach. Trans. Amer. Ophth. Soc. 64: 401, 1966).

* Supramid Extra R. Dr. S. Jackson, Pharmaceutical Diagnostic, Surgical Specialties, 7801 Woodmont Ave., Washington, D. C. 20014.

unite the tarsal edge firmly with the resected conjunctiva and levator aponeurosis. The monofilament is brought through the lids and each end is placed beneath a small square of adhesive tape. The monofilament suture is pulled out about two weeks later [3].

Dr. Beard says "many cases of Horner's syndrome warrent the Fasanella-Servat operation".

In an unusual case of a ptosis that followed a chalazion excision, a bad over-correction followed the ptosis which might have been corrected by this operation [4].

I have described this operation as the 6-S operation - an operation that is indicated for *small* amounts of ptosis, an operation that is *simple*, that leads to *symmetrical* and a *smooth* curve of the lids that can be done in a *short* time and that is *satisfying*, if used in the proper cases, to both patient and to the *surgeon*.

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NUEVO INSTRUMENTO PARA LA CIRUGIA CORNEO-CONJUNTIVAL: EL OFTALMO-TUMI.

POR

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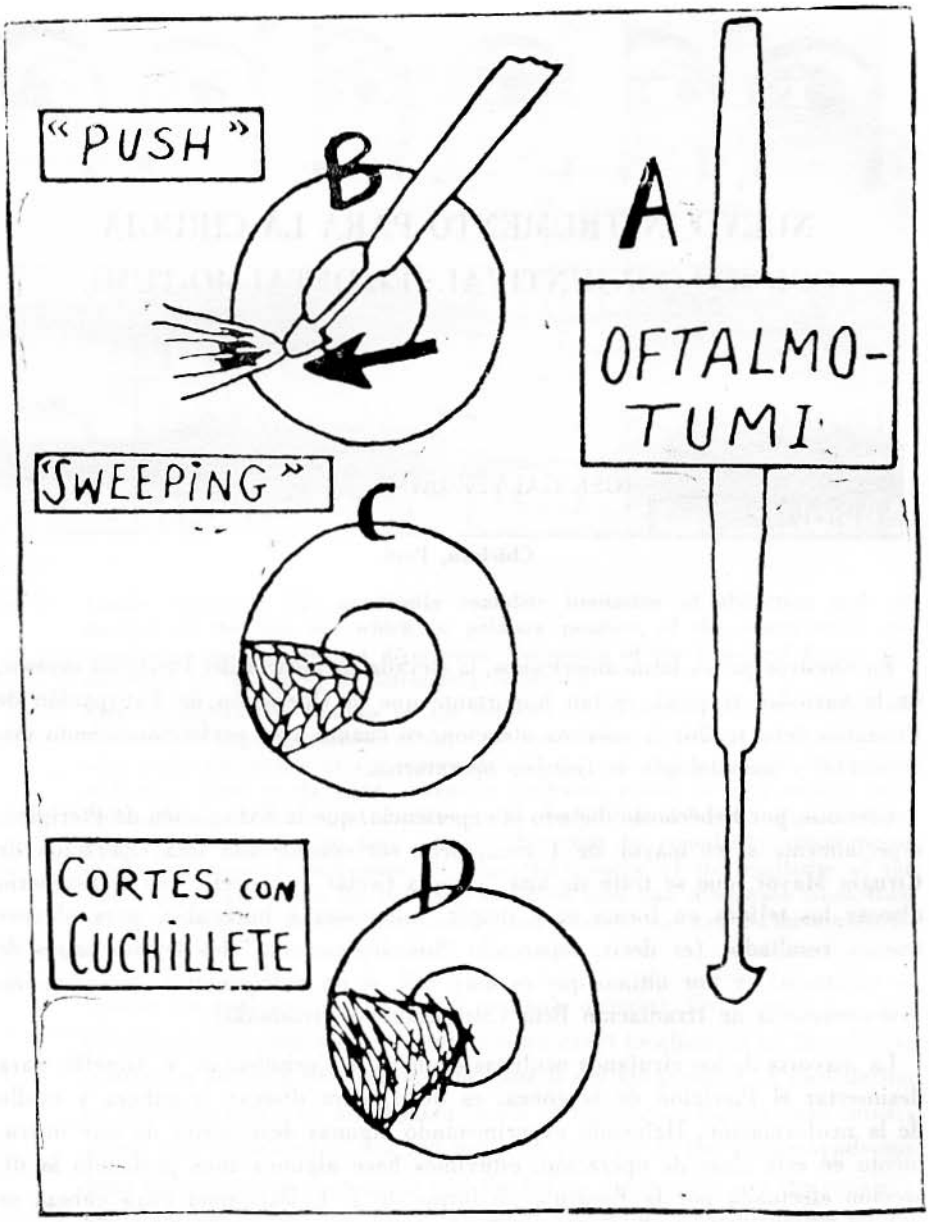
Chiclayo, Perú

En nuestros países latinoamericanos, la elevada incidencia del Pterigión invasor, de la variedad tropical, es tan importante que la Operación de Extirpación de Pterigion debe recibir la máxima atención, en cuanto a su perfeccionamiento instrumental y metodología de tiempos operatorios.

Creemos, por habérnoslo dictado la experiencia, que la Extirpación de Pterigion, especialmente si es mayor de 1 mm., debe ser considerada una Operación de Cirugía Mayor, que se trata de una "cirugía tisular", es decir, que es necesario disecar los tejidos en forma muy limpia, minuciosa é impecable, para obtener buenos resultados (es decir, separando "histológicamente" los tejidos sanos de los enfermos), y por último que es muy útil, si no indispensable, la aplicación post-operatoria de Irradiación Beta (Strontium-90, Itrium-80).

La mayoría de los cirujanos oculistas emplean el Cuchillete de V. Graeffe, para desinsertar el Pterigión de la cónea, es decir, para disecar la cabeza y cuello de la neoformación. Habiendo experimentado algunas desventajas de este instrumento en esta clase de operación, estuvimos hace algunos años probando la disección efectuada por la Espátula piriforme de J. I. Barraquer cuya cabeza es redondeada, con resultados mejores. Sin embargo, este escarificador corneal, que tiene un delicado filo es un instrumento caro, reservado a la Cirugía Keratoplástica. De allí, que hace aproximadamente 7 años, el autor viene apreciando la eficacia de un nuevo instrumento, diseñado a base de un clásico cuchillo cere-



Disección del Pterigión con un nuevo instrumento. — En A puede verse la silueta del Oftalmo-Tumi, instrumento escarificador o disector adaptado de un cuchillo ceremonial del Antiguo Perú. En B puede apreciarse la primera maniobra, de "push" o empuje abriendo el clivaje córneo-conjuntival; en C se observan los movimientos de "Sweeping" o barrido, y en D, la comparación con los cortes disecantes del Cuchillete de Graeffe (observados con Fluoresceina o Azul de metileno, dan la impresión de rajaduras o arañado). De allí la superioridad de la disección con Oftalmo-Tumi.

monial del Antiguo Perú, el "Tumi" de oro de Lambayeque. Este instrumento que Galvez-Jaime ha denominado el "Oftalmo-tumi" fue preparado en forma sencilla, dándole un corte y un filo parabólico a una lanza o Querátomo triangular que haya sido desechado de la Cirugía de Catarata, por haberse mellado (Ver grabado adjunto, Fig. A). Con el Oftalmo-tumi, como puede apreciarse en los esquemas, es posible efectuar con más facilidad tres maniobras sucesivas, muy útiles en la disección del Pterigion, que se han llamado respectivamente: el primer "empuje", el "barrido" disecante, aprovechando el clivaje de ambos tejidos (Figs. B y C) y el "afeitado" de la superficie liberada, maniobra que se puede comprobar y perfeccionar bajo control de la lupa binocular de Zeiss ó inclusive bajo microscopio operatorio.

Los pasos para la disección del Pterigion, realizada con el Oftalmo-tumi son los siguientes:

1. "Push" o empuje. Es el inicio de la maniobra de despegar la cabeza, tomada previamente con una pinza.

2. "Sweeping" o barrido de la adhesión corneo-conjuntival. Esta maniobra se efectúa con suaves movimientos convexos al eje mayor del Pterigion.

3. "Shaving" o afeitado. Este tiempo puede hacerse indistintamente con el nuevo instrumento o con el Cuchillete.

La desventaja fundamental del Cuchillete, es que efectúa una especie de arañado o "scratching" (Fig. D), ya que sus cortes generalmente perpendiculares y oblicuos al eje mayor del Pterigion, constituyen una acción de "sajar y arañar", profundizando en ocasiones en las capas del parénquima sano. Contrariamente a lo anterior, el Oftalmo-tumi efectúa una disección tisular muy cercana a la perfección. Por ello creemos que si asimilamos geométricamente la silueta del Pterigion a un triángulo de vértice redondeado, convexo, hay que deducir que el mejor instrumento para desinsertarlo de la Córnea, no es un filo convexo (sea circular, elipsoidal o parabólico), porque ofrece mejor línea de corte y economía de esfuerzo.

Concluimos la presentación del Oftalmo-tumi señalando que otras aplicaciones del instrumento son: extracción de cuerpos extraños corneales (hemos diseñado un Minitumi de hoja elipsoidal muy pequeña), pudiendo también usarse dándole una curvatura apropiada, para cirugía de la cámara anterior, como Sinequiótomo, con un filo parabólico compuesto, es decir con mayor excentricidad de la curva en un lado.

Avda. Luis González 640.

Arch. Soc. Amer. Oftal. Optom. (1970) - 271.

EPISCLERITIS DE ORIGEN PARASITARIO

POR

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Después de 2 años de escarbar inútilmente en la literatura oftalmológica en busca de publicaciones referentes a episcleritis y escleritis de posible origen parasitario, y no habiendo tenido la suerte de encontrarlas (no sé si existan o no), nos ha parecido interesante el presentar ante Uds. esta comunicación en la cual exponemos varios casos (observaciones personales) que demuestran claramente la participación parasitaria en la génesis de las episcleritis y escleritis que hasta hoy han tenido una etiología más o menos clásica.

He aquí mi primera observación personal:

El 8 de julio de 1965, D. H., de 10 años de edad, pastor de ganado bovino y equino, de condiciones higiénico-habitacionales pésimas, vecino de Tulancingo Hgo., región de la que nunca ha salido, situada a 2,175 Mts. de altitud, de clima templado con temperatura media de 15 Go. C (20-5'-10" lat N; 0-2'-19" lat E y 98-22" lat O), se presenta a la consulta acompañado por su madre, la cual nos relata que desde hace tres días el pequeño presente enrrojecimiento intenso del ojo izquierdo, el que además amanece "chinguinoso" (párpados pegados con secreción espesa), acusando a ratos un cosquilleo muy especial dentro del ojo, con exacerbaciones dolorosas interminentes. Como antecedente, unos días antes de manifestarse el enrojecimiento ocular, el pequeño había estado jugando con un compañero tirándose a la cara puños de tierra.

Una vez separados los párpados, el diagnóstico de miasis ó euliasis ocular se hace de inmediato. En efecto, destacándose sobre el fondo oscuro ofrecido por el área corneal, asistimos a la gimnasia curiosa que ejecuta un vermículo ovoide de 1.5 mm de longitud, de color blanco y coronado por una terminación anterior negra. En medio de un constante movimiento se incurba casi hasta tocarse con sus extremidades, progresando con rapidez inaudita de un polo a otro de la córnea

y dejándose resbalar después hacia abajo por medio de sacudidas acompasadas, siempre con la extremidad negra hacia abajo, para ir por último a arrojarse a la "alberca" que le ofrece el fondo de saco inferior lleno de líquido lagrimal, donde borbotean ya unos 3 o 4 parásitos idénticos. Explorado enseguida el fondo de saco superior podemos descubrir también otros microscópicos gusanos idénticos a los anteriores: unos 4 en total.

Nuestro primer cuidado consiste en desembarazar al paciente de estos molestos huéspedes, y tomando una cucharilla, previa instilación repetida de gotas de cocaína, empezamos a recoger parásitos de los fondos de saco, aislándolos para el posterior examen microscópico. El paciente se tranquiliza con el anestésico local dejándose fácilmente practicar los lavados de los fondos de saco... Nueva exploración, consistiendo en control endonasal, lavado de vías lagrimales y otra vez fondos de saco y conjuntiva bulbar a la lámpara de hendidura, realizando el "Inventario" de lo ocurrido:

La córnea, cuidadosamente examinada, se nos presenta lisa, brillante sobre toda su superficie con excepción del polo superior donde observamos unas ligeras escoriaciones filiformes que toman muy débilmente el colorante.

En la cámara anterior no se descubre nada en particular. Las conjuntivas palpebrales parecen ser las más lesionadas. En efecto, evertiendo los párpados descubrimos verdaderas placas exudativas, o más bien, neo-membranas exudativas que se deprenden fácilmente con el dorso de la cucharilla; la conjuntiva subyacente nos muestra zonas hemorrágicas de unos 3 o 4 mm. de diámetro diseminadas en forma irregular.

Por último examinamos detenidamente la conjuntiva bulbar, la cual se nos presenta con una reacción quemótica y congestiva intensa que se acentúa hacia el meridiano de las 11 Hs., alrededor de un botón blanquecino situado muy cerca del limbo; no descubrimos ningún otro dato de interés .Precribimos instilaciones a base de cortisona-sulfacetamida y pomada a los fondos de saco por la noche al acostarse, diciéndole de volver al cabo de 2 días.

Dos días después, las conjuntivas palpebrales han tomado su aspecto normal, pero no así la conjuntiva bulbar, la cual nos ofrece la siguiente imágen a la lámpara de hendidura: hacia el meridiano de las 11 Hs. donde hacía 48 Hs. habíamos notado un botón hiperémico, encontramos una placa rojiza, saliente, provista de gruesos vasos; bajo la conjuntiva que cubre éste "botón" nos llama la atención la presencia de pequeñísimos puntos negros que se mueven en forma constante pero lenta dentro de una vesícula de unos 4 mm. de diámetro. Al mismo tiempo y hacia el meridiano de las 3 Hs., una pequeña mancha rosada emerge de una base de coloración más oscura, empezando a abombar la conjuntiva a

3 mm. de limbo corneal. El dolor es muy intenso a la presión en el nódulo de las 11 horas.

Cerciorándonos de que los puntos negros que se mueven dentro del nódulo vesicular, corresponden sin duda alguna a las extremidades anteriores de las larvas, se nos ocurre de pronto drenar la vesícula con el fin de eliminarlas, pero pensando que, por otra parte, si no se interviene el nódulo, la evolución de dicho cuadro nos pueda dar datos de mayor interés en los próximos días, se abandona la idea y se dice continuar con el mismo tratamiento médico y volver al siguiente día.

El 11 de julio el cuadro es el siguiente: la fotofobia, el lagrimeo y el dolor son muy acentuados. La conjuntiva que recubre el primer nódulo nos parece adelgazar y los puntos negros móviles han desaparecido, ocupando el contenido de la vesícula un líquido amarillento. Gran cantidad de vasos profundos y dolor muy intenso a la presión.

Mientras tanto, la pequeña elevación rosada de las 3 Hs. va tomando poco a poco el aspecto de la primeras 72 horas antes, empezándose a ver ya, aunque con cierta dificultad los primeros puntos negros que se mueven a través de la conjuntiva muy lentamente. Administramos sedantes por vía parenteral y se dice volver al día siguiente.

Julio 12 de 1965: El Paciente acusa un dolor intensísimo y no tolera la más mínima presión. El el exámen a la lámpara de hendidura nos encontramos con que el nódulo de las 11 hs. ha reventado, dejando escurrir pus amarillento espeso, del cual encontramos restos en los fondos de saco inefrior, conteniendo dos larvas que parecen haber perdido casi por completo su vitalidad; sin embargo, la reacción esmleral es muy intensa. El nóbulo de las 3 Hs. está en su apogeo y presenta exactamente el mismo cuadro que el primero 72 hs. antes: muy prominente y bajo la conjuntiva que le cubre, muy abombada, empezamos a ver con bastante ntidez los mismos puntos negros que se mueven con lentitud, aunque en menor número que en el primero.

Sospechando que dicho paciente no volviese a la consulta por no encontrar mejoría apreciable y siendo imposible por su condición mental y educacional contar con su cooperación para seguir estudiando el caso, decidimos intervenirle bajo anestesia general al día siguiente.

Julio 13 de 1965: El dolor continúa siendo intensísimo, así como la fotofobia y el lagrimeo; además, la secreción conjuntical y la reacción de las conjuntivas bulbar y tarsal ha aumentado considerablemente el día de hoy. Lavado de los fondos de saco. Debridación del nódulo-abceso de las 11 hs. y examen cuidadoso a la lámpara de hendidura: sobre la esclera, observamos una mancha de color

pizarra de unos 5 mm. de diámetro con zonas de necrosis que son eliminadas con una cucharilla; gran excavación escleral al centro. Incisión del segundo nódulo, del cual recogemos 3 gusanos que se mueven con gran vitalidad al ser extraídos; escurre además un líquido sero-purulento en escasa cantidad. Raspado profundo del nódulo en el fondo del cual también encontramos zonas necróticas incipientes, así como la excavación menos profunda que en el primer caso. Cauterización minuciosa de la zona raspada, con ácido fénico diluído y recubrimiento conjuntival con anclaje en el limbo. Apósito con cortisona-cloranfenicol y antibióticos de tipo parenteral; enzymas y sedantes.

A los dos días el ojo se encuentra en calma y a los ocho se han retirado las sedas y se da de alta prescribiéndose un colirio a base de cloramfenicol-cortisona 3 veces al día, dejándose translucir aún a través de la conjuntiva, las manchas de color pizarra. Córnea-cámara anterior e iris sin datos patológicos.

Las larvas han sido depositadas en un tubo de ensayo corto, cubriéndolas con algodón bien apretado, y encima de éste otra capa de algodón glicerinado (alcohol al 60% y glicerina al 5%), y enviadas para su estudio entomológico. El laboratorio las identifica como larvas de Rinoestrus purpúreus, artrópodo de 10 a 12 mm. de longitud que como sabemos parasita más o menos frecuentemente al caballo y equinos en general. Esta variedad de mosca es causante de ésta miasis ocular, más o menos en igual porcentaje que el Oestrus Ovis. En Algéria han sido publicados trabajos muy interesantes referentes a éste útimo artrópodo. Recordamos que la frecuencia de miasis oculares provocadas por el Oestrus Ovis es mucho mayor en éstos países que las ocasionadas por el Rinoestrus purpúreus. Desde el punto de vista clínico, las larvas parecen menos traumatizantes que las del R. purpúreus. Por último debemos hacer notar el carácter "ambulatorio" o "escalonado" que presentaron los nódulos episclerales, así como la ectasia que se observó en el primero de éstos, 3 meses después.

Como segunda parte de esta comunicación, presento ante Uds. dos casos de episcleritis bilateral recidivante provocados por Oxiuros.

El 19 de julio de 1967, dos niñas de 5 y 6 años respectivamente que habitan de siempre en Papantla, Ver., pueblo de clima tropical a 40 km de la costa del Golfo de México, son llevadas a la consulta por su madre, la cual hace el siguiente relato: desde hace aproximadamente tres meses y con diferencia de algunos días, las dos empiezan con enrrojecimiento ocular, lagrimeo y molestia hacia la luz que se mejora con gotas de limón?? (panacea que nuestros indígenas emplean sistemáticamente en cualquier molestia ocular, y también mucha de nuestra clase media y hasta acomodada); sin embargo, al cabo de ocho días el enrrojecimiento se ha acentuado x, apareciendo unos "granitos" alrededor de la "niña", que han ido aumentando en número provocando intenso dolor. En el exámen a la lámpara

de hendidura nos encontramos con los clásicos nódulos de episcleritis en número de 1 a 2 en cada ojo, ausencia de secreción muco-purulenta, inyección limitada a la periferia nodular y evidente participación de vasos profundos. Dolor intenso a la presión. Edema conjuntival localizado bajo la forma de pequeña saliente sobre y alrrededor del nódulo.

Instalamos un tratamiento a base de corticosteroides, antibióticos de tipo local y parenteral y se dice volver a la consulta a los seis días. En ésta segunda consulta notamos una mejoría franca del cuadro, persistiendo aún los nódulos con un tamaño menor y casi sin síntomas inflamatorios. Aconsejamos continuar el mismo tratamiento y volver al cabo de 1 5días. Sin embargo, las enfermas no se regresan más a la consulta posiblemente por haber considerado la madre que se encontraban curadas, sino hasta el día 16 de octubre del mismo año. El cuadro clínico presenta entonces una agudización extraordinaria: hiperemia profunda de color violáceo muy intensa con tumefacción escleral que provoca nódulos enormes muy dolorosos a la presión; además, encontramos fuerte participación iriana y corneal en una de ellas: Del nódulo escleral, la vascularización se ha extendido hacia la córnea, y el limbo no se reconoce fácilmente; turbidez límbica de la córnea y pequeñísimos focos de infiltración en las láminas, parecidos a los de la queratitis intersticial; precipitados límbicos discretos. Miosis acentuada y sinequias débiles aún en la mitad externa del cristalino.

En vista de la gravedad del cuadro ordenamos exámenes complementarios investigando de preferencia, lúes, tuberculosis, focos infecciosos, artritismo, etc.... y solo nos resultan positivos, por un lado el exámen coproparasitoscópico el cual nos revela la presencia de huevecillos y hembras adultas de Oxiuros en el raspado de la región perianal, y por otro la fórmula leucocitaria: leucocitos 11,200 (S= 76; L 23 y M = 1). Se instala de inmediato el tratamiento antiparasitario a base de yoduro de Ditiazanina (Deselmina Lepetit) y violeta de genciana en píldora (oxiuryl). A la niña que no presentaba participación corneal e iridiana se le suspende el tratamiento tópico local ocular y se le da tan sólo el tratamiento general antihelmíntico. A la otra, además de éste, se le prescribe atropina, cloranfenicol y cortisona en colirio.

Al terminar la primera etapa del tratamiento antihelmíntico, o sea a los 8 días, el cuadro nodular ha mejorado notablemente en las dos enfermas y os ojos entran en calma. La vascularización empieza a desaparecer, el dolor lo mismo y los nódulos a reabsorberse. Los síntomas de oxiurosis han desaparecido y subjetivamente las enfermas se encuentran bien. Insistimos en la vigilancia ambuatoria y se dice volver al mes.

Al cabo de 30 días, los nódulos de episcleritis han desaparecido por completo en los dos casos, las conjuntivas se presentan normales y se observa solamente

una ligera vascularización corneal en el caso en que ésta participó. Iris normal. En ambos casos se perciben a través de la conjuntiva unas manchas de color pizarra en los sitios donde antes existieron los nódulos episclerales.

COMENTARIO FINAL

Resumen

Presentamos primeramente un caso de miasis primitivamente conjuntival que terminó con lesiones episclerales y esclerales francas; lesiones no despreciables que sin duda hubieran podido agravarse si no hubiesen sido tratadas precozmente.

No encontrando en la literatura oftalmológica un caso semejante a este, nos ha parecido interesante el publicarlo, haciendo hincapié en que se ha tratado de una verdadera episcleritis de origen parasitario provocada por larvas de Rinoestrus purpúreus. De las dos variedades gemelas de miasis ocular, la provocada por Rinoestrus purpúreus se considera mucho más traumática que la provocada por larvas de Oestrus Ovis. El traumatismo observado en el curso de éste caso de euliasis ocular ha sido provocado sin duda alguna por la acción conjugada de las toxinas secretadas y por los ganchos de la larva, así como por las enzymas proteolíticas (lisis escleral) y la reacción alérgica concomitante.

En segundo término hemos presentado dos casos de episcleritis rebelde al tratamiento clásico, uno de ellos con fuerte participación corneal e iridiana, que cedieron de inmediato al comprobarse la existencia de una oxiuriasis que fue tratada a base de yoduro de Ditiazanina y violeta de genciana, no administrándose en uno de ellos (con toda intención) sino el tratamiento antihelmíntico. Queremos hacer notar la *Hipotensión* ocular que en uno de los ojos (el que tuvo participación cornea e iriana) se presentó desde un principio hasta llegar a los 8 mm Hg., misma que a los 15 días de haberse instalado el tratamiento antihelmíntico adecuado, se normalizó por completo.

La curación tan sorprendente y definitiva de los nódulos que se observó al intalarse el tratamiento antiparasitario, nos lleva a la conclusión de que sin duda alguna ésta episcleritis fue provocada por la oxiuriasis activa que a su vez desencadenó fenómenos tóxicos y alérgicos en la epiesclera. Por último sugerimos la conveniencia de investigar con un poco de más frecuencia, una posible etiología parasitaria en algunas formas de episcleritis.

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DUANE'S RETRACTION SYNDROME

BY

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The retraction syndrome first described by Stilling in 1887 and Türk in 1896 and more exactly defined by Duane in 1905 on the base of a series of 54 cases manifests the following clinical signs:

1. Marked *limitation or absence of the abduction of the affected eye.*
2. *Narrowing of the palpebral fissure on attempting adduction.*
3. Widening of the palpebral fissure on attempting adduction.
4. *Retraction of the globe on attempting adduction.*
5. Deviation of the affected eye upwards or downwards on adduction.

This pattern as been described by Duane is realized in the majority of the cases. Unilateral manifestation (more frequently on the left than on the right side!) is the rule. Bilateral manifestations are a rare occurence. Most of the patients reveal orthophoria with good binocular functions on looking straight ahead. In order to avoid diplopia some patients unconciously move their eyes, respectively their head into the direction of the paretic external rectus, especially in cases where the primary position of the affected eye is slightly esophoric. The presence of a vertical element in the cases of Duane's-Syndrome is a frequent occurence: downshoot or up-shoot on attempting adduction or downdrift on attempating abduction. Not seldom one can find in a typical Duane's-Syndrome also an additional V- or A-pheonomenon.

The *narrowing of the lid fissure on adduction* (varying from some millimeters up to the total closure) is one of the most constant findings and one of the most important symptoms for the diagnosis of the syndrome. The *retraction* of the globe manifests itself also in various degrees; in this connection it has to be mentionned that the narrowing of the palpebral fissure alone may simulate a retraction of the globe. Changes of the palpebral aperture can also occur without retraction. The adduction of the affected eye which according to Duane and other authors should be also markedly limited, is according to our experience not changed at all in the typical syndrome.

From the typical Duane-syndrome, as it has been described above and as it had been named by us as *Duane I*, many cases differ in their symptomatology, although the phenomena of narrowing of the palpebral fissure on adduction and retraction of the globe with eversion of the inferior lid always are to be found. Such an atypical symptomatology of Duane's-syndrome can be according to our newest observations again divided into two groups: Duane's-syndrome II and Duane's-syndrome III.

Duane's-syndrome II manifests instead of the limitation of the abduction a limitation respectively a paresis of the adduction of the affected eye with intact possibility of abduction. On intention to look into the direction of the "paretic" internal rectus a characteristic narrowing of the palpebral fissure occurs, as well a distinct retraction of the globe. Here too anomalies of the vertical movements as described in the typical Duane-syndrome I can be observed. Binocular single vision may be present especially if a compensatory head posture brings both eyes into orthophoric position. The analysis of the electromyographic findings will show that. Duane II is only a special form of the whole group of Duane's-retraction syndromes, where the pathogenetic principle consists in paradoxial innervation of the affected muscles.

In *Duane's-syndrome III* which recently has been observed by us in two patients, there is an apparent paresis of both the external and the internal rectus of the affected eye. On attempting adduction there results a characteristic narrowing of the palpebral fissure and retraction of the globe. In the primary position of the non affected eye, the contralateral affected eye manifests either a parallel or a slightly divergent position. On looking upwards the divergence increases or a divergence become manifest in the sense of a V-syndrome. According to the electromyographic findings also Duane-syndrome III can be classified within the congenital retraction syndromes.

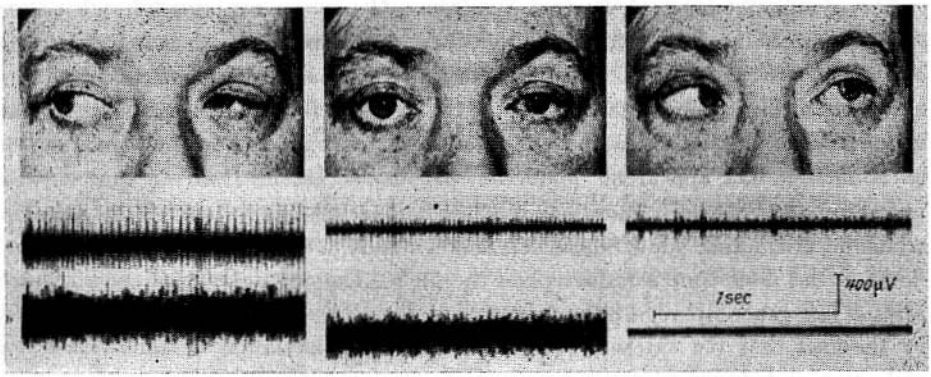

Fig. 1. *Duane Syndrome I*: marked limitation of abduction of the left eye, widening of the palpebral fissure on attempting abduction, narrowing of the palpebral fissure on attempting adduction of the left eye, retraction of the globe on adduction. *EMG* (simultaneous analysis of the external rectus (a) and the internal rectus (b) of the left eye): paradoxic innervation of the external rectus, which manifests maximum electric activity on adduction and minimum on abduction: Normal electric behaviour of the internal rectus: maximum of innervation on adduction, complete inhibition on abduction.

Electromyographic findings:

When recording simultaneously the action potentials from the internal rectus and the external rectus of the affected eye one can prove that the Duane-syndromes are caused by a disturbance of the distribution of the innervation between these two muscles, a phenomenon which has been called by Esslen and Papst *paradoxic innervation.*

In *Duane's-syndrome I* the external rectus shows a pathologic innervational pattern. On adduction the electric activity within the external rectus increases which represents just the contrary of the normal innervation. On attempting abduction the external rectus manifests a distinct decrease of innervation up to complete disappearance of electric activity. The internal rectus however shows normal electric behaviour with a maximum of innervation on adduction and inhibition on abduction. The external rectus of the affected eye in Duane's-Syndrome I has its maximum of innervation on adduction and its minimum of innervation on attempting abduction. The clinical finding of "abducent paralysis" is explained by the fact of the weak or completely failing innervation of the external rectus on attempting abduction. Because of the simultaneous innervation of internal and external rectus on adduction there results a retraction of the globe backward into the orbit.

The symptimatology of *Duane's-Syndrome II* can be explained by the electromyographic findings in a surprisingly easy way. In spite of the clinical paresis of the internal rectus there exists a practically normal electric behaviour of this muscle in all direction of gaze. However the external rectus manifests a maximum of innervation on adduction and a second equally strong maximum of innervation on abduction. The appearent "abduction paresis" in Duane II is not caused by a paresis of the internal rectus, but by a paradoxic co-innervation of the external rectus on attempting adduction which makes impossible a real adduction and produces at the same time a retraction of the globe. The absence of the abducent paralysis (as generelly regarded typical of a Duane-Syndrome) can be explained by the fact that the external rectus has a second maximum of innervation on abduction and therefore can move easily in this direction.

Also the symptomatology of *Duane's-syndrome III* can be explained by the aid of electromyography performed simultaneously on the internal and external rectus of the affected eye. Here the phenomenon of the paradoxic innervation of the external rectus manifests itself in a degree nowhere else to be observed. The normal agonist and antagonist-relationship between these two muscles is completely abolished. It seems as the two muscles of the affected eye would represent parts of one and the same muscle innervated by the same nerve. In the primary position both muscles, the external and the internal rectus, manifest a rather strong and equal innervation. The pattern of electric discharge in both muscles reveals to be practically the same. On attempting abduction there results a complete inhibition of the firing in both muscles, replaced by synchroneus discharges of 30-60 m/sec. duration. These synchroneus discharges appear in both muscles in such a similar way that one would assume moth muscles to be innervated by the same nerve. On attempting adduction there is a distinct increase of the electric activity both in the external and internal rectus of about the same intensity. The result is that the globe cannot be moved towards the nose. Instead of an adduction movement there results a distinct retraction of the globe. The impossibility of abduction is caused by the practically complete inhibition of the external rectus on attempting abduction. The described synchroneous discharges in both muscles on attempting abduction are not enough to enable an abduction movement but only a sort of nystagmus ratractorius .

Apart from Duane's-retraction syndromes of the type I, II and III there exist *other forms of paradoxical innervation*, namely simultaneous innervation of the external rectus with the inferior rectus, with the superior rectus or with several other eye muscles. All these syndromes manifest an apparent more or less pronounced limitation of the abduction and sometimes also narrowing of the

lidfissure and retracition of the globe on attempting adduction. Thus the Duane-syndromes can be placed within a still larger group of congenital disorders of innervation in which a synergistic innervation of muscles which are innervated by different nerves, occurs. Even with the aid of electromyography it is not yet possible to determinate exactly where these paradoxical innervations are centrally located. It might be possible that in future associated neurological symptoms will be able to give further information about the level of these congenital neur-motor lesions which seem to be in connexion with an embryonic maldevelopment. Here it might be of interest to point to the fact that Duane-syndromes may be associated with other developmental anomalies like Kippel-Feil-syndrome, syndactylia, shortened legs, maldevelopment of chest muscles, marked asymmetry scapulae, coloboma outer canthus, heterochromia, hypoplasia maxilla, lens opacities, krokdile tears, nystagmus, deafness etc., abnormalities which may be of significance in pin-pointing the ethiology.

With regard to the ethiology of the Duane-retraction syndrome one could imagine a lesion or anomaly within the posterior longitudinal

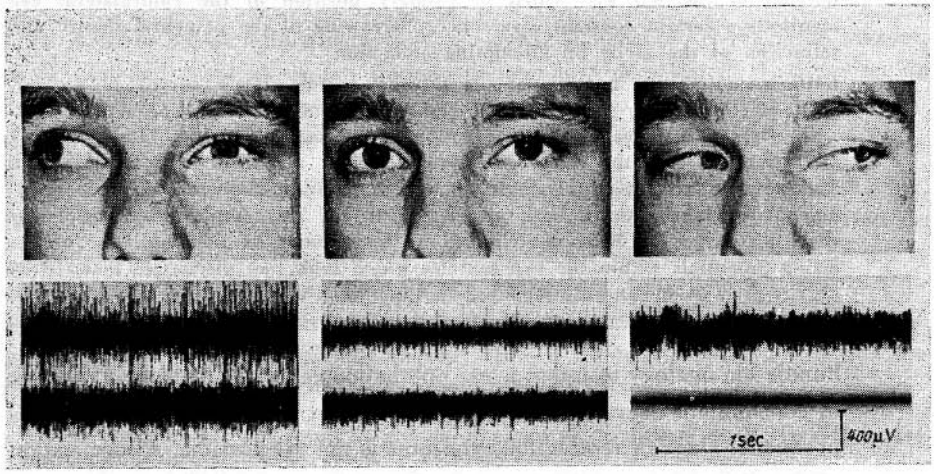

Fig. 2. ***Duane Syndrome II*: marked limitation resp. failure of adduction of the left eye, normal abduction, narrowing of the palpebral fissure and retraction of the left globe on attempting adduction.**
EMG **(simultaneous analysis of the external rectus (a) and the internal rectus (b) of the left eye):**
paradoxic innervation of the external rectus manifesting one maximum of innervation on attempting adduction and another maximum on abduction. Normal electric behaviour of the internal rectus: maximum of innervation on attempting adduction, complete inhibition on abduction of the left eye.

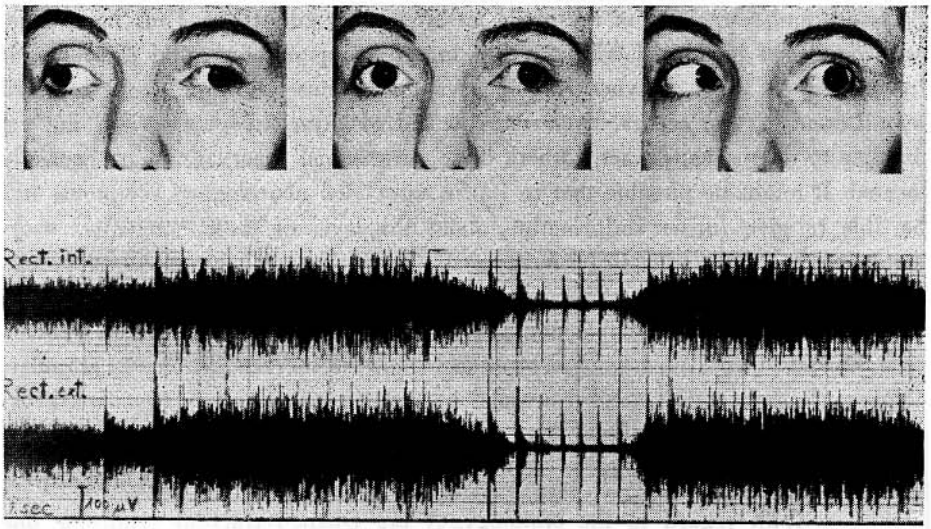

Fig. 3. *Duane Syndrome III*: practically complete limitation of abduction and adduction of the left eye which in primary position of the contralateral eye manifests a certain constant divergence. Narrowing of the palpebral fissure and retraction of the globe on attempting adduction.

EMG (simultaneous analysis of the internal rectus (lower curve) of the left eye): in the primary position of the right eye intensive innervation of both recti with slight prevalence of the innervation of the external rectus. On attempting adduction (gaze to the right) intensive electrictic action in both muscles with strikingly equal pattern of discharge. On attempting abduction distinct phenomenon of inhibition in both muscles, disturbed by completely synchroneous short discharges of 30-60 msec duration (take notice of the similarity of the action potentials within the two muscles which look like discharges taken from nearby parts of one and the same muscle innervated by one and the same nerve!).

bundle (in analogy to internuclear ophthalmoplegia). Considering the lack of concomitant neurological symptoms an exact localization of the process producing Duane's reotraction syndrome is not yet possible. A localization of the disturbance on still higher levels of the cortico-bulbar gaze cerntes seems very improbable, last but not least because in the Duane-syndrome both the command movements and the follow movements and the optically eliciated movements are intact. An other possibility of explanation would be an aberrant innervation on the level of the peripheral eye muscle nerves. In the case of the Duane-syndromes one should assume an aberrant innervation of muscles which are innervated by different nerves

(abducens and oculomotorius). For purely anatomical reasons this seems to be very unlikely; it would be possible only on the base of a hypothesis that in very early embryonic periods the nerves get into contact with wrong muscles.

SUMMARY

There are three forms of the Duane-retraction syndrome which from the clinical standpoint of view can be differentiated:

1. *Duane I* with palsy of abduction, narrowing of the lid fissure and retraction of the eye in adduction;

2. *Duane II* with palsy of adduction, normal abduction and narrowing of the lid fissure and retraction on adduction;

3. *Duane III* with palsy of adduction and abduction and narrowing of the lid fissure and retraction on attempting adduction. By means of electromyography it can be demonstrated that these "palsies" are due to a paradoxical innervation between external and internal rectus. The Duane-rectraction syndrome is to be regarded as a special form of congenital central innervation disorder where a pathological synergistic innervation occurs between muscles which work normally mainly as antagonists.

The electromyographic studies have been performed in collaboration with Dr. Esslen, Director of the Research Departament of the Neurological Clinic, University of Zurich.

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PTOSIS OPERATION

BY

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Ptosis is the term given to drooping of the upper lid, usually due to paralysis and defective development of the levator palpebrae superioris. The condition may be unilateral or bilateral, partial or complete. Ptosis may be cogenital or acquired.

Treatment:

In case of paralysis of the third nerve, treatment must be for the removal of the cause. In case of congenital mechanical ptosis, the deformity can be relieved only by operation.

There are different operation techniques for ptosis which seldom give perfect results. The following method has pleasing cosmetic result: To begin with ptosis should be carefully measured. This method is done with an instrument called Caliper Castroviejo. Ptosis can either occur in one eye or both. If it occurs only in one eye, the amount of the ptosis can be determined by comparing it with the normal eye. If it occurs in both eyes then according to the proportion of ptosis surgery should be done on both eyes.

Surgery

A superficial incision is made on the upper lid about 6 mm above the eyelashes at the length of the eye lid. The upperlid is then everted with an Erhardt eyelid clamp. Parallel to the outside incision 6 mm above the eyelashes, another superficial incision should be made on the conjunctiva. The conjunctiva dissected 3-4 mm in each side. This procedure should be performed in a way that it

should not tear the conjunctiva. Deepening the superficial incision that has an approximately 6 mm from the free edges, so much that it becomes one with the outside incision of the eyelid. At this stage the levator palpebrae superioris has been dissected. The lower section of the levator palpebrae superioris should be brought out through the opening. The size of the muscle being cut is the same as the amount of the ptosis previously measured by the caliper. Then the end of the muscle should be attached with interrupted sutures with 5-0 chromic catgut under the skin at 3mm away from the root of the eye lashes on the tarsus.

The conjunctiva with 6-0 catgut and the incisión on the eyelid with 5-0 silk with running suture will finish the operation.

With the above operation many deformity has had satisfactory results. For an example A. J., eleven years old was born with ptosis, Fig. 3. He has been satisfactorily operated.

Postoperative Management:

1) A protective dressing is applied with sufficient petrolarum album to preven dying of the cornea for a period of seven days.

2) Change dressing daily.

3) Out of bed the first day.

4) The upper eyelid should not be everted for approximately one month, to allow for complete healing.

The ptosis operation can be performed after the age of 3 without any complications.

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A CHALLENGE TO MEN OF VISION, THE CRYOOPHTHALMOLOGISTS

BY

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When one surveys the behavior of human beings during the millenia that they spent occupying the earth. he is struck by the fact that, though they were submerged in a material world, and had to fight continuously for material subsistence, they found ways of widening their horizons beyond the purely materialistic. They let themselves be inspired by ideals, such as the determination of helping their fellow men. Among the many manifestations of such ideals we shall, on this anniversary of the foundation of the Sociedad Americana de Oftalmología y Optometría, consider together some of the humanitarian activities in the preservation of the precious treasure of vision.

I felt proud of belonging to the human race when I was shown a picture of some hundred hospital sisters who together pledged to donate their eyes to an eye bank after their death (Sisters of St. Mary, in St. Louis, Missouri, 1960). I have a similar feeling when I consider the dedication of thousands of ophthalmologists throughout the world who devote their lives to the improvement of man's vision, and, in particular, when I consider their efforts, during the last few decades, to find means of permitting a brotherly exchange of the organs of vision and, concurrently, means of preserving these organs for future exchange. Seen in that light, the rapid development of Cryoophthalmology in recent years, to which Dr. Barraquer made outstanding contributions, becomes an event which deserves mention in the history of the world. I would like, now, to examine with you the close natural connection between these recent developments in ophthal-

mology and some of the great events in the evolution of the world. In the whole, our survey might be entitled: A Meditation on the Marvels of the World of Light.

Let me point out first the similarity between the tool we are using in our attempts to grasp the mysteries of the world —that is, human intelligence— and the tool our body uses to get material information about its surroundings —that is, the eye. Both use the method of drawing pictures of things. Both may be said to be picture mills. Furthermore, the development of our intelligence is, to a large extent, the result of the activity of our eyes. It may even be said that our intelligence is the prolongation of ocular vision. We think by means of pictures. Let us now apply this very method of thinking to our survey of the great events to be described. That is, we are going to glance at the history of the world in a series of pictures (there will be seven of them). This will constitute the first part of the present paper. The second will be devoted to the challenge announced in the title.

PART I

A Glance At The History Of The World With Particular Reference To The Role Of Light

Picture Nº 1

The World of "Intensely Active Bodies"

What strikes our intelligence as being one of the primordial facts in the universe is the existence of billions of bodies (the stars) which are characterized by a very intense activity; their constituent particles are continuously bombarding each other at immensely high speeds. This is the same as saying that they are very hot, for, temperature is nothing else but the rate of motion of the constituent particles. We have a fair notion of that intense heat in the case of our closest star, the sun.

The picture of these intensely active bodies represents what we actually see either with our unaided eyes or through telescopes, when we gaze at the stars

at night. But, while our eyes and telescopes see only a part of the spectacle at a time, the eyes of our imagination draw the whole picture.

To handle pictures, we put them in frames. In the same manner, our mental pictures of the world are set in a mental framework, the concepts of space and time. Our understanding of the universe is entirely based on space and time. To use the expression of some philosophers, the space-time perception represents an "a-priori form of the mind".

To recapitulate, our Picture No. 1 is that of millions of suns, dispersed over an inconceivably large space, and lasting for a stafferingly long time. They are, by their nature, continuously flooding the universe with light.

Picture Nº 2

The World of Light and of Radiations

God said: "Let there be light" and there was light. This momentous event, the creation of the world of waves, was the starting point of some of the greatest happenings in the history of the universe. The mere fact of the existence of hot bodies means the emission of radiations.

Let us try to visualize the world at that stage, long before there was any human being, long before there was an earth. The numerous suns were continuously flooding space with beams of light, or rather with beams of all denominations, from the shortest X-rays and gamma rays to the longest radiations. Imagine, that is, see with the *eyes* of the imagination, that interplay of waves crossing the universe in all directions at a terrific speed (300,000 kilometers per second) and doing it for billions and billions of years.

Picture Nº 3

The World of "Bodies of Sluggish Activity"

There were in the Universe other bodies, which, from the cosmic point of view, are dense aggregates of molecules, sluggish in their movement, in a condition which we call cold. One of these bodies, the earth, was rotating around the sun and continuously flooded, for some two billions of years, by the rays of the sun.

Picture Nº 4

The World of Life

After such a flooding, or to put it in other words, after that kissing for billions of years between the world of waves and the world of cold bodies, and possibly as a result of that kissing, there developed at the surface of the earth some aggregates with very particular properties, among them that of duplicating themselves. This is the world of living beings, with all its wonders .

Picture Nº 5

The Collaborative Action of Living Matter and Light

Some of the living beings underwent one of the most mysterious and most remarkable processes. Flooded with light for half a billion years (or rather for half that time, since the flooding was partially interrupted at night), they reacted by developing systems capable of receiving and absorbing the flooding light. We may distinguish two such systems which will be represented in two pictures.

Picture Nº 5A

The World of Carbohydrates

One of the two systems, the chlorophyl in plants, receives the flooding waves, catches them and stores their energy to transform water and carbon dioxide into carbohydrates. Thus, essentially, the chlorophyl system absorbs the waves to manufacture food. It is a gigantic food mill which has supplied all of us living beings for millions of years. It also supplies heat to warm us up in the winter, for, in burning coal, we recuperate the heat of the sun stored in plants millions of years ago.

Picture Nº 5B

The World of Vision

Another system has been developed by Nature in which the waves reflected by bodies at the surface of the earth are transformed into electrical impulses which contribute to the drawing of a picture on a plate of living tissue, the

retina (in a manner similar to the way electrical impulses draw pictures on the television screen). This system (the eyes in animals) transforms the waves into messages which give living beings information on the world around them. The eyes thus become one of the most precious assets in animal life.

PICTURE Nº 6

The World of Intelligence

The information about the world obtained by man through his eyes led him to a high level of intellectual achievements which made him the king of creation. This picture shows man mastering the universe by focusing his eyes on every creature, asking them how they are made and how they work, using magnifying lenses, telescopes and microscopes of various kinds. He has lately invented the electron microscopope; not long ago he invented photography. The twentieth century man is very busy trying to understand things. He wants to go to the moon and to Mars to understand better what goes on over there. His eyes created an insatiable appetite for knowledge. This picture therefore represents a hungry man, hungry for things of the mind.

PICTURE Nº 7

The World of Ophthalmology

Man became very conscious of the treasure he possesses, his eyes, and he is now applying his intellectual ability to the preservation of that treasure. Among the men hungry for knowledge, there is a group, the ophthalmologists, who focused their microscopes and adjusted their other modern scientific instruments on the eye itself. And among the ophthalmologists, those whom I am now addressing have decided to concentrate their efforts on the use of one of the latest methods of preserving vision —the use of cold in cryosurgery, cryotherapy and eye banks. I am honored to salute the men of vision appearing in this picture— the Cryoophthalmologists.

PART II

THE CHALLENGE

The general purpose of cryoophthalmology being the improvement of ways of preserving sight by the use of modern techniques in law temperature, the

challenge is to develop a long-range research program in which the latest advances in the cryosciences will contribute to the utmost to the realization of the intended aim.

Among the latest developments in biology, one is its passage into a molecular science, that is, into a science in which the processes are seen at the molecular level. In other words, molecular biology is a science in which biological structures and activities are seen at such a magnification that the behavior of the molecules can be visualized; and molecular cryobiology is a science in which the behavior of the molecules involved in the processes of freezing, thawing and related phenomena becomes visualizable. Now, the molecule of water measures three angstroms across (one angstrom is one ten-millionth of a millimeter), and to visualize its activities one would need a magnification of several millions (a magnification of one hundred millions would enlarge a molecule of water to the size of a tennis ball). Our task may thus be described as consisting in observing and picturing, at very high magnifications, what happens when biological materials are frozen and thawed.

In the outline of the prerequisites for the research program in cryoophthalmology that I am now to present, I shall first enumerate the essential points on which information is required; then I will illustrate the mode of approach and the results obtained in a comparable research program on the freezing of muscle, in which we have been engaged for several years in our laboratories; finally I will examine some of the practical ways of meeting the challenge.

A. The Fundamental Data Needed in the Program

The program may be described in a general way as follows; to trace in each component part of the eye the behavior of the molecules during the freezing and thawing processes, to determine the characteristic features and the distribution of the ice, and to find what changes the growth and the melting of the ice bring about in cells and tissues. The actual problems to be investigated may be classified into the following four categories:

1. *Structure of the Component Parts of the Eye*:

(a) Anatomy of the parts at the cellular and molecular level,

(b) Water content and distribution of the water in tissues and cells,

(c) Chemical composition,

(d) Physiological properties.

2. *The Freezing, Storing and Thawing Conditions*:

(a) Freezing and storing temperatures,

(b) Freezing and thawing rates and their controlling factors,

(c) Time of exposure in the frozen state.

3. *Effects of Freezing, Storage and Thawing*:

(a) Type, number, size, of ice particles, and their distribution in tissues and cells,

(b) Amount of ice formed, and amount of nonfrozen water,

(c) Degree of dehydration by freezing,

(d) Chemical effects of freezing, storing and thawing (such as denaturation of proteins),

(e) Physiological effects of freezing, storing and thawing (such as changes in permeability),

(f) Effects of cryoprotective agents.

4. *Supplemental Information of Import to the Surgeon or Physician*:

(a) Parts which must remain viable and parts replaceable by synthetic substitutes,

(b) Particular properties which must be preserved (such as permeability, turgor and transparency of the cornea),

(c) Problems related to immunity.

Note: This table is a summary of the program that I presented in a previous paper (Luyet, 1966) to which I refer the reader for more details.

B. Mode of Approach Followed in Our Cryobiological Studies on Muscle

Structure of Muscle. A muscle consists of fibers, that is, of thread-like structures of a diameter of the order of 20 to 80 micra, arranged in a more or less parallel direction (Fig. 1, D). A fiber consists of many fibrils, which are also parallel threads measuring about 1 micron in diameter. Diagram A of Fig. 1 represents, at a magnification of 50.000, a cross section through two fibrils *fl*

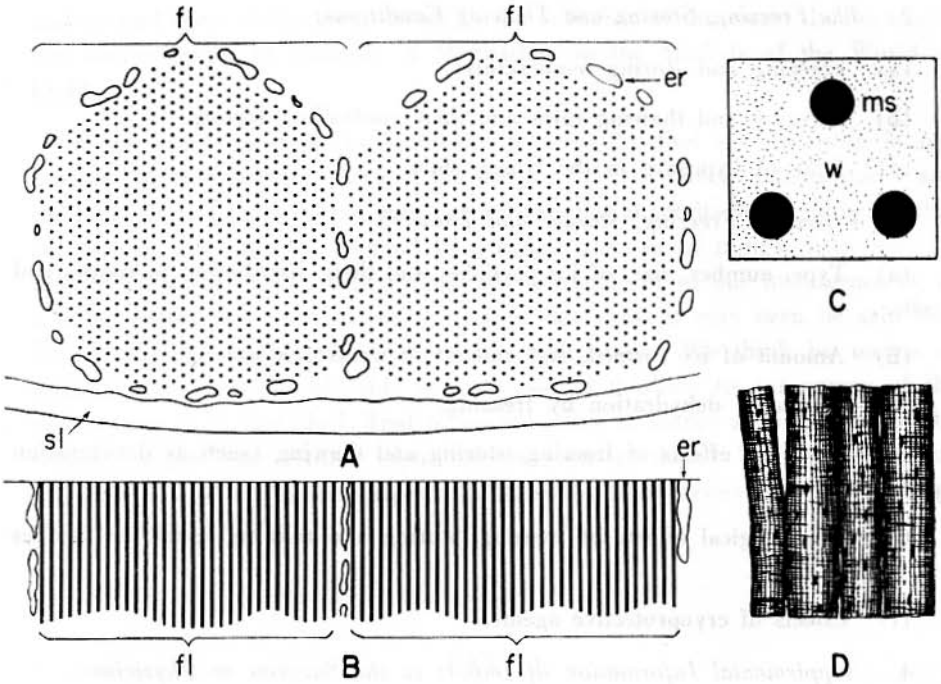

Fig. 1. Diagrams representing the structure of a muscle fiber. A. Cross section through a peripheral region, showing two fibrils (*fl*), *the endoplasmic reticulum* (*er*), and the sarcolemma (*sl*). x 50.000. B. Longitudinal section through the part of the fiber represented in A. C. Portion of A enlarged 10 times to show the relative dimensions of the myosin filaments (*ms*) and of the molecules of water (*w*). D. Group of fibers seen at a magnification 100 times lower than that of A and B. (From Luyet, 1959).

adjacent to the sarcolemma *sl* (the wall of the fiber). Each fibril is surrounded by a thin reticulum, the "endoplasmic reticulum" *er*. Diagram B represents the same structure in longitudinal section. A fibril consists itself of regularly arranged myofilaments, indicated by the fine dots in Diagram A, and, at a magnification ten times higher, by the large black spots marked *ms* in Diagram C. The myofilaments are bundles of molecules of myosin of which the diameter is of the order of 10 millimicra (100 angstroms). The space between them, about 20 millimicra, is occupied by the sarcoplasmic fluid, an aqueous medium of which the molecules of water are marked W in Diagram C. — The problem now before us is to find out what happens, at the molecular level, when the system freezes.

Freezing of Muscle. When the water in the sarcoplasmic fluid is transformed into ice, the structure may be considerably distorted. This is illustrated in a comparison of the two photographs of Figure 1. Photo. 1 is an electron micrograph of a normal, not frozen fibril showing the individual filaments and the transversal bands or lines A, I, Z and Z and M; and Photo 2, an electron micrograph of a frozen fibril showing how ice particles (now blank spaces) had grown myofilaments, pushing them aside into bundles, and to what extent the cross striations are dislocated. This case will suffice to illustrate the relationship between the dimensions of the ice particles and the structural disturbance. By reducing

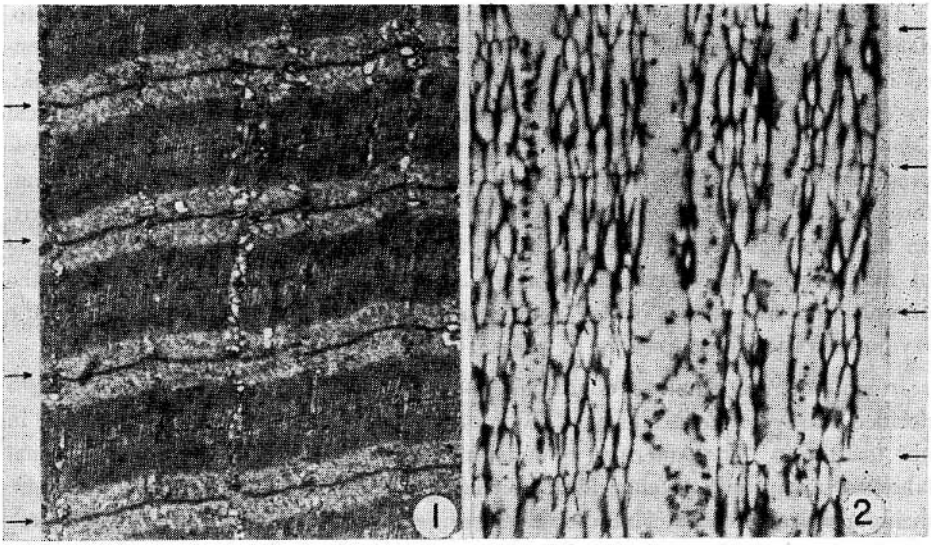

Fig. 2. Electron micrographs of longitudinal sections of frog's muscle fibers. Photo. 1: from control, not frozen fiber. Photo. 2: from a fiber frozen at -150°C. and vacuum-sublimed. The arrows on each side point to the Z lines of the muscular striations in the two specimens. In the frozen fiber, the myofilaments have been aggregated into bundles squeezed between the ice particles, now represented by blank spaces, which measure about 0.5 x 0.2. u. Magnification: 14000 x. (From unpublished files of Menz and Luyet.).

the size of the particles one can reduce, or even avoid the disturbance (see paper by Menz and Luyet, 1961). — Although I mention only mechanical effects of freezing here, one should not conclude that all injury by freezing is of mechanical origin.

C. Toward a Practical Realization of the Program

A research program covering adequately the fundamental problems in cryoophthalmology is an undertaking of major dimensions. The research itself should be preceded by a survey of the present status of our knowledge (1) on the ultrastructure of the component parts of the eye, as studied, for example, by electron microscopy, (2) on the mechanism of visual perception (sa established by physiologists and biochemists), and (3) on the structure and functions of organis of vision in lower forms of life, as investigated by embryologists, comparative anatomists and comparative physiologists (as an example of the work of the latter, I will mention the studies conducted on visual perception in flies at the California Institute of Technology).

To provide surveys of such, or of similar studies, to keep the surveys up-to-date, and also to coordinate the research conducted by the cryobiologists interested in basic problems with the research on cryopreservation in the medical field, we (Lieutenant-Commander V. Perry of the Tissue Bank of the U.S. Navy Medical Center, and I) inaugurated, three years ago, a series of conferences, the "Cryopreservation Conferences", which have been held annually since. The first conference dealt with the cryopreservation of skin and of cornea. The first part, on the skin, has been published and I refer the reader to the introductory note of that publication (Luyet and Perry, 1966) for further information on the organization and scope of the Conferences. The second part dealing with the cryopreservation of cornea is in press.

In annother attempt to coordinate basic cryobiology and cryomedicine, I decided last year to establish a "Biomedical Laboratory" as a separate unit in our Institution "The American Foundation for Biological Research". Our original laboratory continues to concentrate on basic biological and biophysical research, the biomedical laboratory studies the cryopreservation of tissues or organs, such as are stored in tissue banks. But the overall emphasis in the operation of the two laboratories (one in the Washington area, the other in Madison, Wisconsin) remains the coordination of basic and applied research.

The next and last question is: what do we do practically to meet the challenge about the coordination of basic and applied research in cryoophthalmology? I would like to take this opportunity to propose that we arrange a meeting in which specific plans for some collaborative undertakings be discussed.

This paper is a slightly modified version of the talk given by Prof. B. Luyet at the opening session of the Society for Cryoophthalmology, in Las Vegas, New Mexico, on January 9, 1967.

Wisconsin.
The American Foundation for Biologics, Research

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SPONTANEOUS ORBITAL HAEMORRHAGE

BY

FRANK W. LAW

London - England

If one uses a title such as the above it is incumbent upon one to define exactly what it means. The purpose of this paper is to consider the occurrence of haemorrhage within the orbit not caused by local trauma and not referable, as far as can be ascertained, to any constitutional causative condition. Its justification consists in the rarity of the condition; in a long career the writer has personal experience of only three cases. It is unfortunate that the notes of one of these three cases are not available; it was, however, identical in all essential details with the two to be presently described.

It is likely that a true spontaneous haemorrhage, using the phrase in the literal sense, never occurs. Even when the expression is used in the convential sense the occurrence is of extreme rarity, as Whitwell (1956) points out. He describes the case of a 63 year old woman, who suddenly developed a severe headache and right proptosis. No systemic abnormality was discovered, the orbit was evacuated of blood at operation, and recovery was rapid and complete. Whitwell quotes two similar cases, apparently truly spontaneous Wheelers (1937) second case, in a man of 45, and that of Roberts (1955) in a man of 25. Most, if not all, of the other cases to which he refers would appear to have some systemic cause to which the occurrence could be referred. Thus, Wharton Jones (1863) described the event in a young woman dying of uraemia and Priestly Smith (1888) a similar occurrence in a haemophiliac. Awerbach (1933) described two cases which he called spontaneous, but they were associated with scurvy and haemophilia respectively.

In the Graefe-Saemisch Handbuch Birch-Hirschfeld (1930) reviews the literature and reports one personal observation. His collection appears to refer to cases associated with some causative general condition, such as haemophilia, scurvy, bload dyscrasia, renal and vascular disease, or some gynaecological or obstetrical event. Spangol (1964) described an orbital haemorrhage without local trauma in a 46 year old female; 1 ml. of blood was aspirated from the orbit, and vision was unharmed. He attributes the cause to preclimateric hormonal influences. Kubik (1963) described it in a man of 50 years of age, with moderate hypertension (200/100). Pavia's case (1962) was unusual on account of the recurrence which the patient suffered. He was a man of 38; the blood coagulation time taken on the occasion of his first haemorrhage was 10 minutes. Recurrences occurred subsequently at intervals of three years, five years and eleven years. The cause was said to be increased capillary permeability and metabolic disturbance affecting coagulation time.

The two cases here presented were similar in that they were both fit young men, and in each case the haemorrhage was at least preceded, if not actually caused, by moderate physical exertion which in such subjects wou'd not ordinarily be looked upon as a potential cause of vascular catastrophe. The first patient was in his early thirties and may truly be described as an athlete of unusual physical strength and fitness. In the preceding decade he had been an oustanding oarsman, and had taken part in this strenous pursuit for years at regattas and in University rowing. For three successive years he rowed in the Oxford boat in their annual race against Cambridge. On leaving the University he took up rugby football, played for one of the most prominent clubs in the country and was given a Trial for the English team. His physical condition was therefore beyond reproach; he lived a very healthy life, and died in his seventies of carcinoma of the lung. At the time in question he was waiting in the boathouse, with the Oxford crew, for the moment to arrive when they should get into their boat and take to the water for the annual race against the sister University; the time of the year was, as usual, early spring; the weather was cold and he was suitably clad as a spectator. Such a moment is charged with some tension, and a nervous atmosphere is always apparent; by way of creating a diversion he walked into the gymnasium and, taking hold of the rings, did a slow turn and landed quietly on his feet. He immediately felt an impulse in his right orbit; his eye was rapidly and considerably displaced forwards, and he saw double. Despite his consternation he followed the race in the launch, overcoming the unusual embarrassment of seeing four crews by the simple expedient of covering the affected eye with his hand. On consulting the writer that evening, the eye was found to be proptosed some 10 mms. and a little depressed; movements were limited, and diplopia was

present in all positions of gaze. Knowing his past history I did not take too serious a view of his trouble; I told him that in a day or two he would have a "black eye" that the eye would gradually recede to its normal position, that his diplopia would disappear and ocular movements return to full, and that his sight would be unimpaired. All these prophecies were strictly fulfilled; I saw him seven times in the ensuing thirty years and noted no residual trouble from the occurrence at any time.

The other case was that of a young man in his late twenties, a resident medical officer in a London hospital, and son of one of the consultants to the hospital. Again he was a perfectly fit type; before the occurrence he had a mild infective hepatitis, but the serum bilirubin had returned to normal in a week. He was returning from a social occasion of a midly convivial nature in his car, and leant over the back of the driving seat to retrieve a tool from under the back seat. He felt an impulse behind the right eye and took little notice of it; next morning the right eye was proptosed, there was a subconjunctival haemorrhage, and he saw double in all directions of gaze. The proptosis increased during the day; by the time I saw him at hospital considerable consternation had been caused to his father and colleagues as may be imagined, and many investigations were already in hand, including full blood examination, skull X-ray etc., all of which in due course proved negative. Vision was unimpaired, but there was some discomfort on ocular movement. Mainly on account of his family background, I admitted him to hospital for a few days. The proptosis subsided slowly but not quite completely; diplopia was sometimes noticeable subsequently on ocular deviation when he was tired. Three years later the condition recurred in very similar but milder fashion, this time following an attack of vomiting. Recovery was complete in two days. It is interesting to note that in the interval between the two episodes the subject had done an amount of flying with the Royal Auxiliary Air Force, including aerobatics, which sometimes involved subjection to "negative G" to the point of "red-out"; no harmful effects followed these experiences, and there was no residual effect other thant that mentioned above in the subsequent 10 years.

Though in each of the cases described it is true that some exertion preceded the episodes, it is felt justified to describe them under the heading "spontaneous". It is interesting to speculate on the probable cause of such occurrences in healthy fit young men. Just as subarachnoid haemorrhage may occur unsuspected and unannounced in apparently fit people, often from a local congenital vascular weakness, so presumably could orbital haemorrhage occur. Opportunity is not provided for the investigation of such a possibility. Something of the kind may,

and indeed must, be operative; if so, it is strange that the event does not occur more often. It is further difficult, on such a supposition, to account for the recurrences which occur in this condition, and to explain why such episodes do not occur in other regions of the body. No great difficulty arises in considering the occurrence of orbital haemorrhage in the presence of predisposing general states, and the fact of exertion apparently being a factor in the two cases here described may provide some clue in the elucidation of an unusual condition.

SUMMARY

Two cases of orbital haemorrhage occurring in fit young men following mild exertion are described. The relevant literature is reviewed. Attention is drawn to the frequent existence of a predisposing general state, and its absence in the cases described.

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LYMPHOID TUMOURS OF EYELIDS

BY

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Herbut [1] classified the lymphomatous or reticular tumours as: lymphoma, giant follicular hyperplasia (Brill - Symmer disease), Hodgkin's disease, lymphosarcoma, reticulum cell sarcoma and different types of leukaemias. Cells of these tumours share the same mother reticulum cell. Hogan and Zimmerman [2] wrote "There is probably no aspect of ophthalmic pathology that is more difficult for both the student and the experienced practicing pathologist than the differential diagnosis of malignant lymphoma and reactive lymphoid hyperplasia. At the risk of oversimplifying, lymphoid tumours of the orbit including those arising in the lacrimal grand, like those of conjunctiva, lids and uvea may be placed in three main groups.

At one extreme there is a very small group which is obviously malignant in which the cells are poorly differentiated. There may be cellular pleomorphism but polymorphism is absent. These are the cases of reticulum-cell sarcomas and cases of acute leukaemias.

There is a much larger group of lymphoid tumours of a reactive or chronic inflammatory rather than neoplactic nature. The lesions may be predominant'y proliferation of lymphocytes or of reticulum cells but many other cell types participate as polymorphonuclear leucocytes, eosinophils, plasma cells and macrophages.

The third group is lymphoid tumours composed of relatively pure lymphocytic proliferation. It is possible that some of these might evo!ve into generalized

lymphocytic lymphosarcomas but in our experience this must be a very unusual occurrence. Follow-up studies generally fail to produce evidence of generalized disease and the lesions typically respond to small amounts of radiation.

My series of 22 histopathologically diagnosed lymphoid tumours of eyelids included:

I. Twelve cases of aleukaemic reticulum cell sarcomas of eyelids occurred at any age. After partil excision for biopsy and X-ray treatment all these cases recurred and most of the patients died within five years of the onset of the disease.

II. Leukaemic infiltrations of eyelids with acute leukaemias occurred in 4 cases. All the cases were in children and were fatal within six months of the disease onset inspite of X-ray and supportive measures. They included:

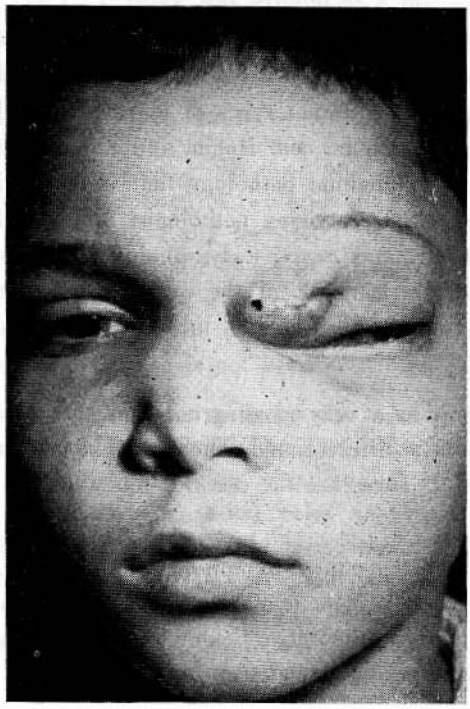

Fig. 1. (case 1) Left upper lid aleukaemic reticulosarcoma with monocytosis of one months duration in a boy aged 9 years.

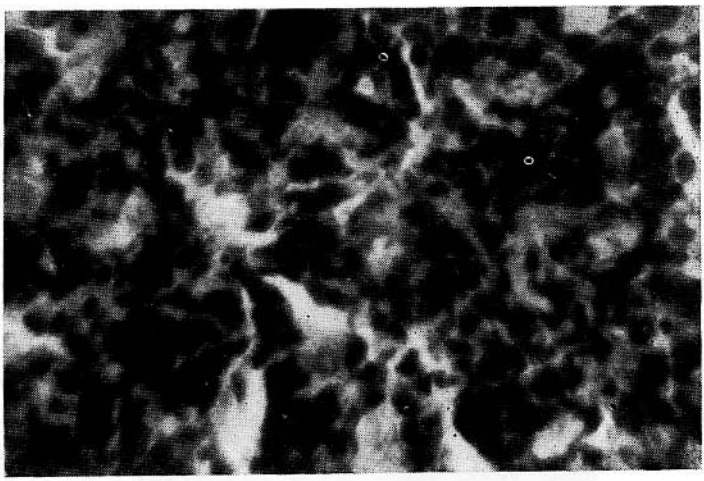

Fig. 2. (case 1) Eyelid reticulosarcoma showing malignant reticulum Cells. Note irregularity in size, shape and staining properties of the cellas and their nuclei (H. & E. 540).

a) Three cases of eyelids myeloblastic infiltrations with myeloblastic leukaemia.

b) One case of right upper lid monoblastic infiltration with monoblastic leukaemia.

III. 6 cases of aleukaemic eyelid lymphoma of a reactive lymphocytic hyperplasia nature occurred in adult patients. All the cases were cured after partial tumor excision and mild anti-inflammatory doses of X-rays.

Case reports.

The lid lymphoid tumours usually extend also to the conjunctiva, lacrimal gland or orbit. The following 3 cases are chosen to describe the main lymphoid tumours of the eyelids.

Case 1:

9 years old boy (Fig. 1) complained of swelling of his left upper lid of one month duration. His general condition was poor. Both eyes were normal, fundi normal, visual acuity in each eye 6/12.

A soft tumour occupied the left upper lid. There were no enlarged lymph glands, liver or spleen. The blood Wassermann reaction test was negative. The differential blood count showed monocytosis. Red blood corpuscles 4'600.000:

white blood corpuscles 7,100. Basophils 1, Eosinophils 6, staff nucleated 7, segmented 54, lymphocytes 25, monocytes 7. X-ray examination of orbits was normal.

The tumour which was very soft, vascular and friable came out in pieces and was found to involve the upper part of the orbit. Histopathological examination of the removed tumour pieces stained with Haematoxylin and Eosin showed large cells of irregular size and shape held in a reticular stroma. The cells nuclei were large of various size, shape and staining properties (Fig. 2). Foots silver reticulin stain showed the cells to lie on argyrophilic reticular fibres. The picture was consistent with a reticulum cell sarcoma of eyelid. Fresh tumour cells smear showed malignant reticulum cells. The cells were fairly large and of varied shapes, round, polyhedral, oval or irregular. Their cytoplasm was feebly stained. Their nuclei were relatively arge varied in shape, size and staining properties. The

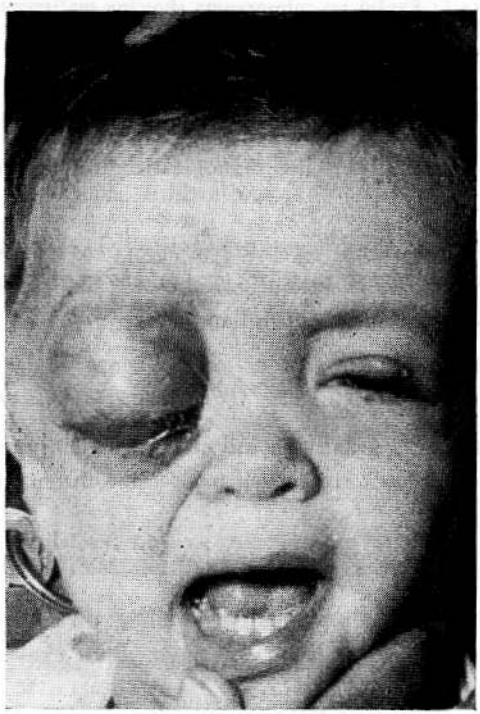

Fig. 3. (aces 2) Right upper eyelid myeloblastic leukaemic infiltrations with myeloblastic leukaemia of one month durations in a male child aged 3 years.

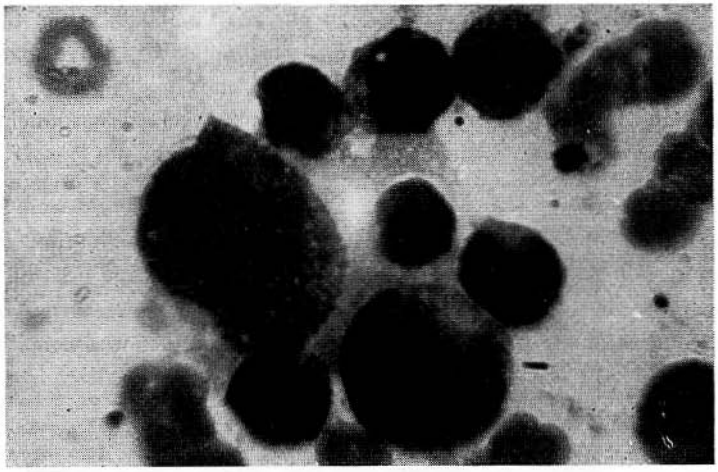

Fig. 4. (case 2) Blood smear showing myeloblasts. (X 1200).

nucleus was vesicular with a sharply defined nuclear membrane and a delicate network of chromatin with granules at the intersections. Many reticular fibres extended between the cells. All the cells present were primitive reticulum cells. There were no differentiated cells.

Inspide of X-ray treatment to the lid tumour and supportive measures the tumour recurred after four months and the girl died within one year of the disease onset.

Case 2:

3 years old boy (Fig. 3) had right upper lid swelling and proptosis of one month duration. The child was anaemic, showing dyspnea on exertion and painful knee joints. Temperature was 37.9 c. and pulse 90. Gums were swollen and bled easily. The liver was not enlarged but the spleen was enlarged one finger below the costal margin. Lymph glands were not enlarged. There were no septic foci.

The right upper lid was swallen due to cellular infiltration. There were right proptosis of 26 mm, limitation of ocular movements and chemosis of conjunctiva. The right fundus showed papilloedema, dilated tortuous retinal veins and fine retinal haemorrhages. The left eyelids and eye were normal.

Skull X-rays, faeces and urine were normal. Blood Wassermann and tuberculin tests were negative .Blood count showed the picture of myeloblastic leukaemia

(Fig. 4), Haemoglobin 40%, red blood corpuscles 3'330.000, white blood corpuscles 22.700; platelets 67.400 basophils 0% eosinophils 3%, myeloblasts 83%, premyelocytes 2%, myelocytes 2%, juneviles 0%, staff nucleated 1%, segmented 2%, lymphocytes 0%, monoblasts 0%, promonocytes 0%, monocytes 0%, macroblasts 0%, normoblasts 6%, and reticulum cells 1%.

The right upper lid tumour was hard grey infiltrating the lid and extending in the upper part of the right orbit. Histopathological examination of a part of the tumour stained with haematoxylin and eosin showed large cells of irregular shape held in a fine reticular stroma. The cells nuclei were large, of varied shape, size and staining properties (Fig. 5). The picture was consistent with myeloblastic infiltrations.

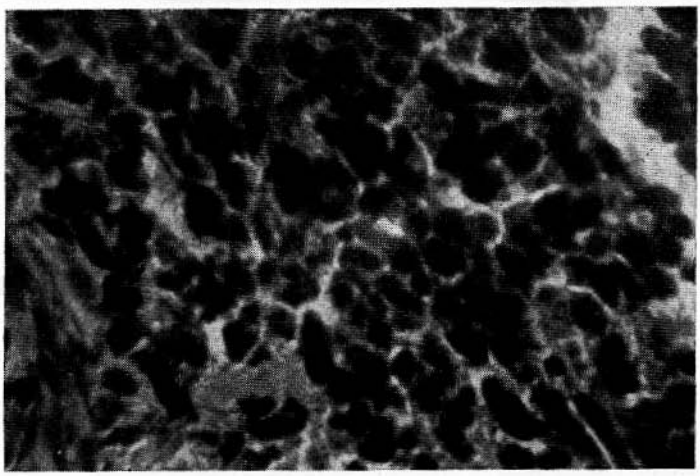

Fig. 5. (case 2) Myeloblastic infiltrations of eyelid, showing cells of different size, shape and staining properties held in a reticular stroma (H. & E. X 540).

The lid tumour was treated by X-ray. Blood transfusion, liver extract, vitamin B-complex penicillin and cortisone were given but the child died one month later from severe epistaxis.

Case 3:

44 years old woman (Fig. 6) complained of a swelling of her left lower lid of 7 months duration. Both eyes were normal with visual acuity in each eye

Fifg. 6. (case 3) Left lower lid beningn reactive lymphocytic hyperplasia of 8 months duration in a 44 years old woman.

6/12. The right eyelids were normal. The general condition was good. Only the left preauricular lymph gland was enlarged. There were no enlarged, liver or spleen. Temperature was normal. The blood total and differential counts were normal.

Histopathological examination of the diffuse lid tumour removed showed diffuse mature lymphocytic infiltration (Fig. 7).

Fresh tumour cells smear (Fig. 8) showed non-malignant reticulum cells, differentiated lymphoblasts and abundant mature lymphocytes. The lid diffuse tumour was a reactive lymphoid hyperplasia.

Treatment continued by mild anti inflamatory doses of X-ray to the affected left lower lid and enlarged left preauricular lymph gland. The left lower lid swell-

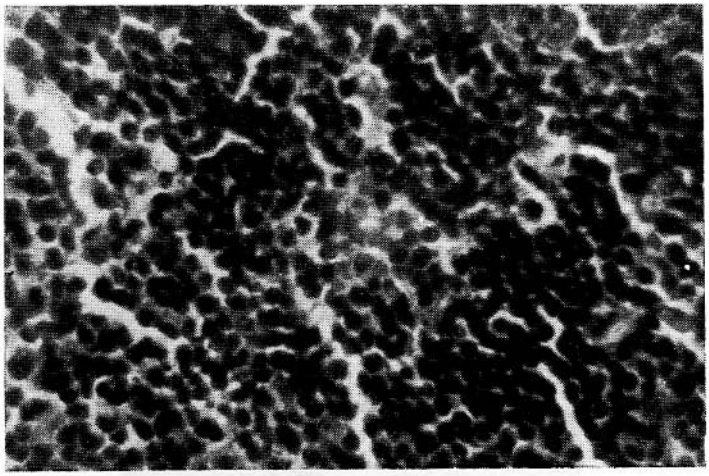

Fig. 7. (case 3) Reactive lyphocytic hyperplasia showing hyperplasia of mature lymphocytes. (H. & E. X 540).

ing and enlarged preauricular lymph gland disappeared (Fig. 9). For 6 years follow up there was no tumour recurrence, leukaemic blood changes, or enlarged lymph glands.

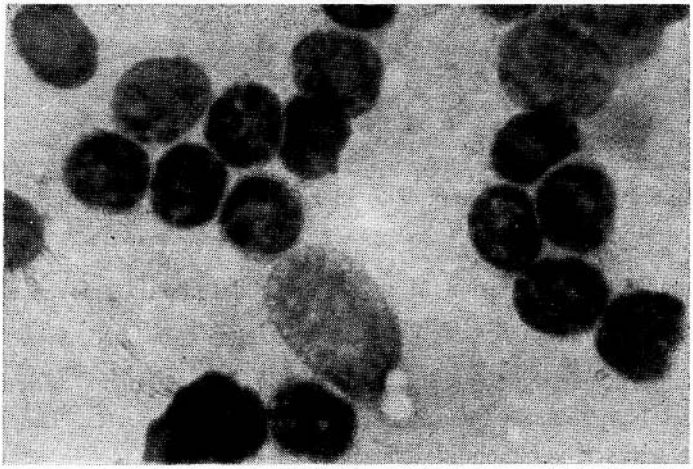

Fig. 8. (case 3) Benign reactive lymphocytic hyperplasia cells smear showing non-malignant reticulum cells, differentiated lymphocytes (Giemsa stain X 1200).

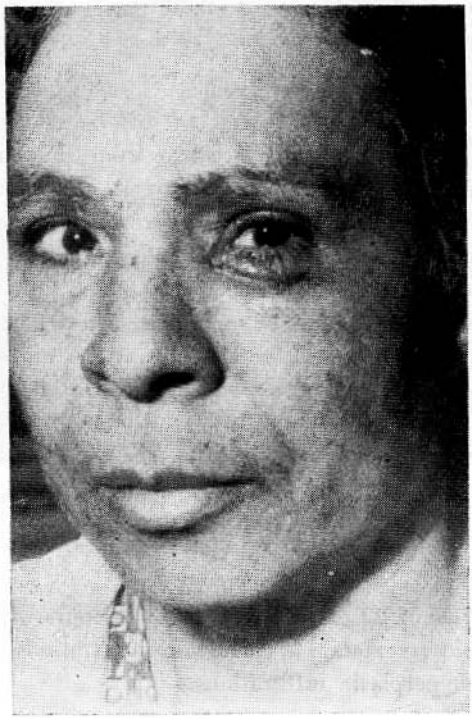

Fig. 9. (case 3) The woman after anti-inflammatory doses of x-ray to affected left lower lid. Shwoing absence of left lower lid swelling.

Comment

Mortada [3] described nine cases of orbital reticulum cell sarcomata showing that they are the commonest malignant tumours of the orbit in Egypt. In one of these cases the orbital tumour extended from the eyelids. Mortada [4] described 3 cases of acute leukaemias accompanied by orbital and lids leukaemic infiltrations. These cases included a case of myeloblastic infiltrations with myeloblastic leukaemia a case of monoblastic infiltrations with monoblastic leukaemia and a case of lymphoblastic infiltrations with lymphoblastic leukaemia, The 3 cases occurred in children and had a rapid fatal termination. Mortada [5] described 4 cases of orbital, lid, lacrimal gland and conjunctival partly encapsulated or nonencapsulated infiltrating masses composed of mature lymphocytes of a benign

reactive hyperplasia nature. Many of these cases may histopathologically erroneously diagnosed as lymphosarcomata.

Mortada [6] stresses that in a section fixed in formalin and stained with Haematoxylin and Eosin it is usually difficult to differentiate orbital lid ,lacrimal gland and conjunctival reticulum cell sarcoma from monoblastic, myeloblastic or lymphoblastic leukaemic infiltration. Also it is sometimes difficult to differentiate malignant lymphoma from benign reactive lymphoid hyperplasia. Differentiation of the different lymphoid tumours is easier and quicker after examining their tumours cells smears stained with Giemsa stain. In case of reticulosarcoma the smear shows malignant reticulum cells, reticular fibres but no differentiated cell, in monoblastic leukaemic infiltrations monoblasts; in myeloblastic leukaemic infiltrations myeloblasts and benign reactive lymphoid hyperplasia non-malignant reticulum cells, differentiated lymphob'asts and lymphocytes.

SUMMARY

1) Among my series of 22 cases of lymphoid tumours of eyelids there were: 12 aleukaemic reticulosarcomata, 4 leukaemic infiltrations and 6 aleukaemic reactive lymphocytic hyperplasia infiltrations.

2) Lymphoid tumours of eyelids are usually accompanied by the same lymphoid infiltrations of the conjunctiva, orbit or lacrimal gland.

3) In eyelids reticulosarcomas occur at any age, lymphomas usually in adults and leukaemic infiltrations occur mostly in infants and are fatal by virtue of the leukaemic proccess.

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18A, 26 July Street

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THE COSMETIC BIFOCAL

BY

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The principle of the pinhole lens as a method of aiding the presbyopic patient has laid dormant in the mind of the contact lens industry for sometime. In 1932 Herr Zillig who as a student at the Zeiss School of Jena, conceived the idea of a contact lens which was made of an opaque periphery and a small clear central area which acted as a pinhole apeture. Zillig reported that the lens eliminated the use of accommodation for ordinary activities at any distance, and gave a wide field of vision [1]. The advantage of the pinhole aids the presbyopic patient by virtue of the fact that the depth of focus is increased to the point that near vision is possible without the addition of power for near vision.

Perhaps this principle was overlooked in the thinking of the manufacturers in the contact lens field, or due to the difficulties in manufacturing such a lens. was early abandoned as a possible solution to the presbyopic problem.

As the pupil size is made smaller in a contact lens, the depth of focus is increased. In order to accomplish this principle in a contact lens, the pupil size has to be incorporated in the form of a cosmetic contact lens. With early experimentation, the practitioner found that the peripheral field was eliminated to a great extent and the patient was restricted to a visual field of approximately 60 degrees.

These early problems offset the advantage of the pinhole lens application to the presbyope and led to various other attempts to solve the presbyopic problem with corneal bifocal lenses.

1. Freeman, H: The Letters to the Editor: The Optician, June 23, 1950.

The Bicon is an annular type of bifocal which has one zone for near power and second zone for distance on the outside surface of the lens. The two distinct curves are of different radii on the outside surface. Surrounding the central zone containing the distance Rx is the annular zone for the near Rx.

At the same time that the Bicon was developed in the United States, de Carle introduced a bifocal which was an annular type for near power and a second zone for distance; only the curves for the different radii were ground on the inside of the lens. The de Carle bifocal lens uses the difference in index of refraction between the plastic and pre-corneal fluids to achieve the desired difference for near.

Later the British Bifocal was developed which was combination of the Bicon and the de Carle essentially being manufactured as a de Carle, with additional power placed on the outside periphery of the lens for near vision.

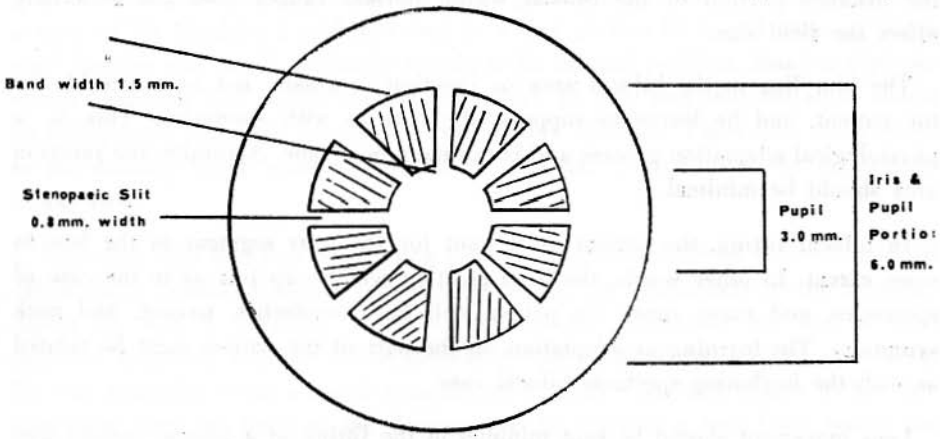
The C. J. Black Fused and Cinefro bifocal were attempts to manufacture bifocal similar to spectacles. The C. J. Black was ground as a one piece lens and looks like an "Ultex" only being ground on the outside surface, while the fused is a two pice bifocal and resembles a "Kryptok" lens.

The fused bifocal lens is very popular today and is manufactured with plastic of two different indices.

The piggy back bifocal is comprised of two separate lenses. The standard single vision lens is first fit for distance, and then later a second lens is constructed with the necessary power for the add, and with the base curve of the second lens paralleling the outside surface of the single vision lens. The add power lens is then cemented into place on the front surface at the correct position for near vision. The piggy back in practice has not been a successful bifocal application.

The two color bifocal used spectral wave lengths to cause a chromatic power differential for patients with a low add. The dual color lens is a single vision lens which acts like a bifocal by taking advantage of certain colors to focus before other colors. For instance, a yellow color would be used in the center distance portion of the lens, and this would be surrounded by an annular ring of blue plastic. In this manner, the patient could tell whether he was looking through the distance or near point of the lens. The two color bifocal has an approximate add of from 1.25 to 2.00 diopters, depending on the combination of colors used.

Trifocal lenses also have been manufactured. The principle of continuous vision is also used in the multifocus lens. Today, for the most part, the Bicon, the de Carle, and the Fused Bifocal are prescribed by the majority of practitioners.



Example of Cosmetic Bifocal Configuration which is Subject to Variation Through Further Research

If the single vision lens position upwards, the Bicon or de Carle most likely will give the best results. If the single vision lens positions downwards, the fused bifocal is recommended; however, to a great extent, the type of bifocal used is a matter of choice by the practitioner.

All present types of bifocal contact lenses require great skill in centering. All patients who are fit with single vision contact lenses first, should be viewed from the standpoint of good centering and positioning of the lens.

The problems associated with the fitting of various types of bifocal contact lenses described resulted in the creation of the cosmetic bifocal. In the use of the pinhole, the visual field is restricted to about 60 degrees, but with the cosmetic bifocal this restriction is eliminated.

By taking a page from the Eskimo's history with slit lenses, the cosmetic bifocal has 8 mm. slits placed in horizontal, vertical, and oblique meridians to give an almost normal field of view.

The practitioner must first consider the symptoms that are normally expected in the fitting of the bifocal lenses. The bifocal is the same as the single vision lens in that there are normal adaptive symptoms as well as "true" symptoms for which an adjusment can be made.

In fitting bifocals, the size of the field must be considered. Just as the normal changes of the pupil size does not affect the field of vision noticeably, altering

the distance portion of the bifocal within normal ranges does not materially affect the field size.

The blur line in the bifocal area or junction is usually not as noticeable by the patient, and he learns to suppress the blur as with spectacles. This is a physiological adaptation process and is normally overcome. Naturally, the junction area should be minimal.

In bifocal fitting, the patient must hunt for the near segment in the lens to some extent. In other words, the head position will be up just as in the case of spectacles, and many times the patient will have headaches, nausea, and neck symptoms. The learning or adaptation on the part of the patient must be related as with the beginning spectacle bifocal case.

Lens movement should be kept minimal in the fitting of a bifocal contact lens with no affect on wearing time, as circulation of tears must remain unimpeded. With each blink, the lens must remain as stationary as possible. In a spectacle lens with a decentration of 3.0 mm., the equivalent drop in a contact lens is equal to 1.0 mm. at the plane of the cornea.

If a patient has trouble with his reading distance, the bifocal is either too low, the power is not correct, or the junction creates a blur area. The use of Lumicon R markings greatly aids the practitioner to observe the centering and position of the lens on the eye in a normal as well as downward gaze.

One of the disadvantages in the Bicon was the junction blur which has caused considerable complaints by patients and can lead to non-wearing. Use of the fused bifocal has helped to eliminate this problem. In the fused bifocal, plastic of two different indices are fused together, creating a sharp demarkation between the segments and has eliminated most of the objectionable blur area junctions of the Bicon.

The best method of fitting bifocal contact lenses is to first start with the single vision first, then advance to the bifocal. For this reason, many patients adapt faster to bifocals after having worn single vision lenses. In our research clinic, best results have been achieved with patients who use single vision contacts as a prelude to the fitting of bifocal contacts. In most successful bifocal cases, the pupil is encroached by the segment, and the pupil line is not seen by the patient in a normal position. The tear layer should be a calculated minimum as an unevenness causes flare and induced prismatic effect, and minimal movement should be the desired goal in the bifocal fitting case.

A good reason for learning to fit bifocal contacts, is in preparation for future generations of presbyopes. In the United States there are approximately 58 million people age of 45 or over who are potential bifocal contact lens cases. The practitioner should "keep his hand in it" and continue to fit a number of patients so that there will be no doubt that bifocal fitting can be successful. The experience gained from the continued fitting of bifocal lenses allows the practitioner to observe a repetition of the same factors over and over, thereby gaining an insight to the problems as was the case in the early days of fitting single vision lenses.

With the knowledge and skills gained, the practitioner can be even more successful and establish a reputation for successful fitting of bifocal lenses. With proper screening of patients, an even higher ratio of success can be achieved by the practitioner.

Some practitioners solve the bifocal problem by fitting patients with one eye for distance and the other eye for near vision. This interference with binocular visual patterns should not be advocated.

Proper indoctrination and explanation to the patients should be the pre-requisite in the fitting procedure. The essentials for success in fitting bifocal contacts require proper lens fitting, centering and control of movement, plus the additional skill and knowledge of the practitioner.

The ability to control centering and movement is not as critical in the cosmetic bifocal. The cosmetic bifocal as described is actually an advancement of the pinhole bifocal lens. I have personally been wearing the cosmetic bifocal for some time and have found excellent results. I have also been delighted in the response from the presbyopic patients whom I have fitted with the cosmetic lens. Positioning and centering are no longer a major concern, although large areas of decentration are to be avoided. Generally, the patients remark "why didn't you use this type of bifocal in the first place?".

The practitioner can calculate the amount of concentration by the width of the cosmetic contact lens pupil. A cosmetic pupil size of 3.0 mm. would allow for a 1-1/2 maximum decentration although greater decentration could be tolerated because of the slits. This is in great contrast to the small amount of decentration permissable in line junction bifocals such as the Bicon, de Carle, and fused bifocals.

The color of the vehicle plastic can be manufactured in blue, brown, green, or grey in number one tints, although a clear lens is better for light transmission. The cosmetic lens has the added features of the bifocal lens and the Eskimo

slits for peripheral vision, and gives the patient adequate depth of vision, even though the lenses are not perfectly centered. Occasionally on extreme rotations, the patient may even be looking through the slit portion of the lens.

In order to create better transmission of light, clear plastic is advisable. The lenses are manufactured with the center cosmetic portion outside of the pupillary area and can be either. 75 mm. or 1.5 mm. wide. The 1.5 mm. width of the opaque section has approximately the effect of a number 1-1/2 tint visually. The .75 mm. opaque portion has the visual effect of a clear lens.

Many variations are possible in the position of the slits and in the size, shape or number of slits present in the cosmetic bifocal. Clinic research is still being conducted in this area.

The basic advantage of the cosmetic bifocal is that centering does not have to be as exacting, and that there is no particular image jump. A patient can read with the lens at the normal head position, instead of head tilting, and there is no need for prism or truncation in the manufacture of the lens as the fitting is simply the same as a single vision case. If needed, toric surfaces are possible on the front and back surfaces.

In some subnormal cases, the pinhole factor can increase the visual acuity of the patient, and increased acuity has been reported as well in keratoconus and irregular corneas.

In aphakia cases, the pinhole factor can well be taken advantage of, as the total plus power required will be less.

In the standard presbyopic case, the pinhole factor can also be utilized in that the plus power can be "pushed" slightly on the patient with no effect at distance and increased benefits at near point. Many times, it has been found that the increased plus is not necessary.

A great deal of clinical research still has to be done on the cosmetic bifocal but early clinical research indicates that the cosmetic bifocal works for it combines two elementary principles - the pinhole and the Eskimo slits to provide the contact lens practitioner with a real practical bifocal with great future possibilities.

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CONSTATATIONS CLINIQUES ET HISTOLOGIQUES CONCERNANT LES HEMORRAGIES CHOROIDIENNES SIMULANT LES TUMEURS MELANIQUES

PAR

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Parmi les nombreuses affections oculaire Reese en enumère 15 dans la dernière édition de son traité sur les tumeurs oculaires qui peuvent simuler le mélanome malin choroidien, l'hémorragie choroidienne est la plus difficile à identifier. Son aspect ophtalmoscopique imite entiérement celui du mélanome. Cette ressemblance est la cause qu'un grand nombre d' hémorragies choroidiennes ont été identidiées seulement par l'examen histologique des yeux suspectés d' abriter des mélanomes malins.

Sur un hombrede 47 yeux enuclées avec le diagnostic de melanome malin de la choroide nous avons trois fois trouvé á l'examen anatomique, un veritable hématome, situé entre l'epithelium pigmenté et les cellules visuelles, et dans un cas, una hémorragie choroidienne invadant le vitrée.

Dans la littérature ophtalmologique, á notre conaissance, les examens histologuiques concernant tels yeux rares. C'est le motif que nous avons jugé utile de relater nos observations.

Obs. I. M. Ecaterina, 38 ans. Depuis 6 mois la malade remarque la baisse de l'acuité visuelle de son oeil droit. Le champ visuel de cet oeil est amputé dans le secteur temporal. Tension oculaire normale. Examen ophtalmoscopique: soulévement rétinien nasal marqué, sans plis, immobil, assez nettement delimité,

d'aspect grisatre-marron entre la papille et l'ora serrata. L'examen microscopique de l'oeil coupé en deux (Fig. 1) découvre une formation noire qui décolle la rétine nasale.

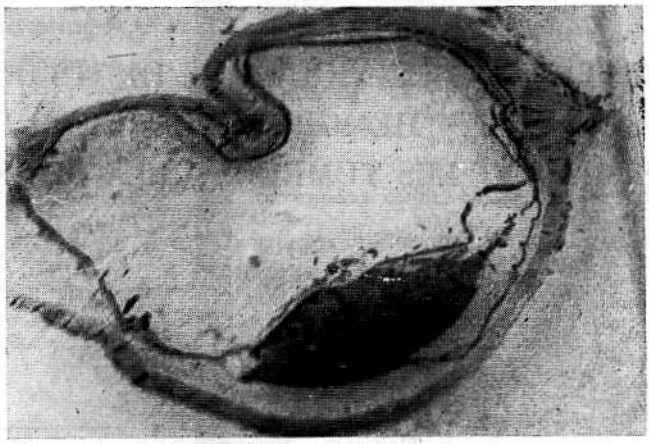

Fig. 1

Sur les coupes histologiques, cette formation se revèle a être un hématome logé entre l'épithelium pigmenté (Fig. 2) et les cellules visuelles. La membrane de Bruch et l'epithelium pigmenté alterés sont, dans la zone adjacente au hématome,

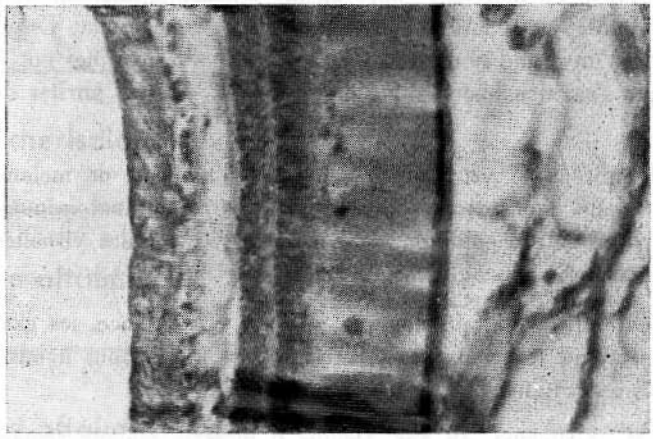

Fig. 2

dechirés. La surface interne de l'hématome est recouverte partout par les cones et les batonnets. A coté de l'ora on remarque une hemorragie intrachoroidienne,

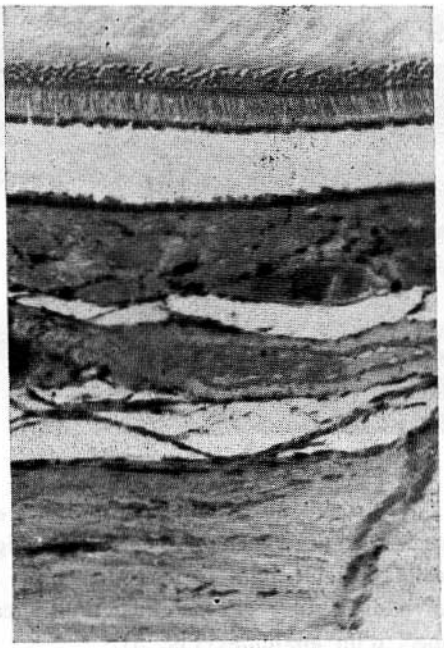

Fig. 3

veritable hématome disecant. Les parois des artères choroidiennes sont épaissies, celles veineuses atrophiées et amincies (Fig. 3 et 4).

Obs. II. D. Ioan, 55 ans. Depuis 8 mois baisse progressive de la vue de l'oeil gauche.

Examen ophtalmoscopique. Décollement immobil de la rétine (10d.), de couleur grise-ardoisée entre la papille et l'équateur, dans le secteur temporal. Sur les deux moitiés de globe oculaire sectionné on voit que la rétine est décollée entre la papille et l'ora, par una formation brunatre consistente. L'étude histologique montre qu'il s'agit d'un hématome placé entre l'epithelium pigmenté et les cellules visuelles l'epithelium pigmenté et la mebrane de Bruch présentent plusieurs reptures, épaississementes et plis. On remarque les mêmes lésions des arteres, et des veines choroidiennes comme dans l'observation précédente.

Obs. III. L. Maria, 48 ans, présente baisse de la vision de l'oeil droit, les derniers 8 mois et l'amputation du champ visuel temporal.

A l'examen ophtalmoscopique on constante dans le secteur nasal un décollement globuleux (23 D1) immobile grisjaune de la rétine toujours entre la papille et

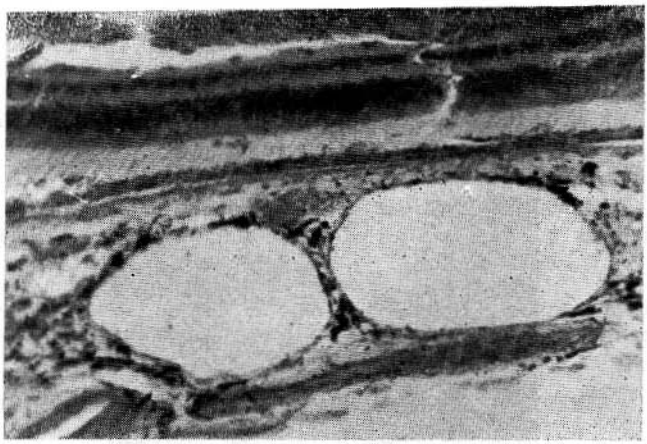

Fig. 4

l'ora. Au microscope on retrouve un décollement rétinien etendu causé par un hématome siégeant sous les cellules visualles. L'épithelium pigmenté, la membrane de Bruch et les vaisseaux présentent les mêmes alterations que les observations precédentes. Dans un endroit on observe une multiplication des vaisseaux choroidiens ayant l'aspect d'un angiome (Fig. 5).

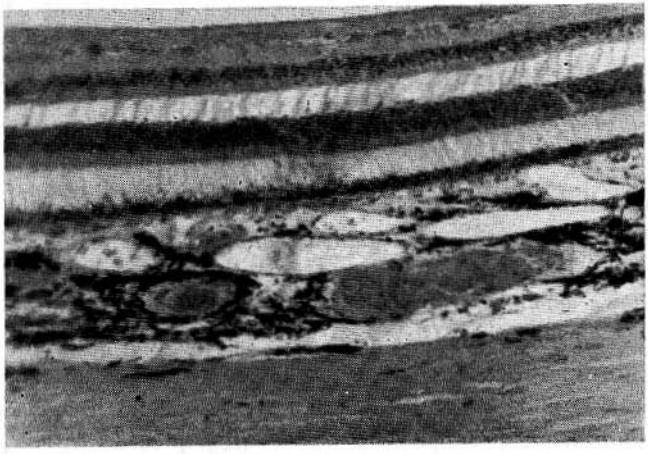

Fig. 5

Dans les trois observations mentionnées plus haut, la translumination sclérale a été négative.

Obs. IV. D. Marta, 69 ans, admise à la clinique pour douleurs oculaires internitentes et la perte de la vue de l'oeil gauche.

Examen ocuaire. Quelques éctasies sclérales; la cornée est opalescente, la pupille dilatée, le fond de l'oeil inéclairable et la tension oculaire 52 mm (Shoiötz). La trépanation Elliot n'aboutissant á normaliser la tension oculaire, on décide l'énucléation de l'oeil.

L'examen macroscopique de l'oeil coupé en deux pièces montre qu'une masse noire consistente comble les chambres oculaires. Elle est constituée d'un caillot parsemé d'un grand nombre d'amas pigmentaires (Fig. 6). La choroide présente des alterations vasculaires et des hémorragies massives. La lamina vitrea et l'épithelium pigmenté des déchirures à travers lesquelles l'hémorragie s'infiltre dans la rétine, de a même maniére comme dans les trois cas précédents. Dans cette derniére observation, l'hémorragie a dechiré aussi la rétine occupant totalement la chambre du vitrée.

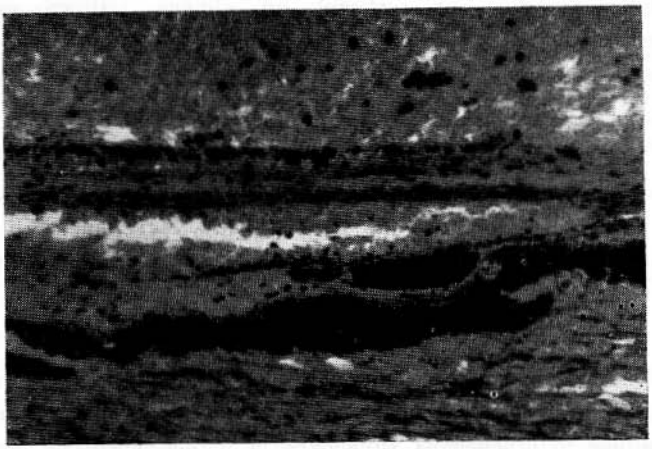

Fig. 6

Les alterations vasculaires choroidiennes n'étaient pas cantonnées en aucun de nos cas au territoire des hématomes intrarétiniens. Elles étaient présentes aussi dans les endroits environnants et même dans ceux éloignés. Nous n'avons pas trouvé des altérations vasculaires rétiniennes marquées que dans l'observation II (angiosclerose hypertonique). De l'examen de la totalité des coupes histologiques il résulte que dans tous les cas les hémorragies étaient choroidiennes et qu'en déchirant la membrane de Bruch et l' epithelium pigmenté elles ont formé des hématomes intrarétiniens entre l'epithelium pigmenté et les cellules visuelles.

Les lesions primaires se trouvent donc au niveau des vaisseaux choroidiens. Les parois des artères deviennent épaissies, homogénes et hyalinisées. Les veines, dont

les parois sont amincies, atrophiées et reduites par place à une sevle couche épitheliale, sont dans quelques endroits enormement dilatées.

On peut facilement comprendre qu'en contact avec une choroide tellement alterée, la membrane de Bruch et l'épithelium pigmenté degenèrent et deviennent mois résistents.

Les examens cliniques et de laboratoire ne nous ont pas fourni des donnés concernant les causes des alterations vasculaires recontrées. On peut soupçonner l'intervention de la sénéscence dans les observations II et IV et dans les cas I et III (jeunes gens) un état constitutionel alteré des vaisseaux.

D'après l'evolution lente des troubles subjectifs il semble que les hémorragies choroidiennes se sont graduellement developé. Leur pression augmentante a dechiré la membrane de Bruch et l'épithelium pigmenté puis s'est infiltré entre celles-lá et les cellules visuelles en réalisant un clivage rétinien comme dans le décollement "Idiopathique" de la rétine. Plus tard, ainsi que dans notre IV-ème observation, l'hémorragie déchire la barrière constituée para la rétine invahissant le vitrée.

Quelques hémorragies choroidiennes simulant le mélanome malin de la rétine sont relatées dans la littérature ophtalmologique plus ancienne /Sattler, Bedell/. Un nombre plus grand est publié par Kirk et Petty, mais sans de données histologiques. Dans une observation plus récente de Rones et Zimmermann, une petite hémorragie choroidienne était enquistée et contenait des cristaux d'oxalate calcique.

Reese et Jones ont décrit sous l'etiquette d'hématome de l'épitheilium pigmenté une lésion qui, d'aprés eux, simule dans le plus haut degré le mélanome choroidien. L'hématome habituellement situé dans la région maculaire, entre l'épithelium pigmenté et la lamina vitrea est d'apparition brusque. Il se revèle en quelques semaines puis se resout et se resorbe laissant en place quelques taches pigmentaires. Selon Reese et Jones, il a son origine dans l'épithelium pigmentaire et la membrane de Bruch. Nous n'avons pas rencontré cette neóformation sur nos coupes histologiques.

* * *

Au terme de ce travail, sachant que la seule solution thérapeutique offrant quelques garanties, quo ad vitam, reste encore aujourd'hui l'énucleation du globe oculaire contenant la tumeur, on doit se demander si les mélanomes malins constituent ou non des urgences chirurgicales? Théoriquement on peut donner un

réponse negative surtout pour les petites tumeurs /Flocks, Gerende et Zimmermann, Dunphy/. Mais l'ophtalmologiste, même experimenté, ayant le souvenir du cortège des malades morts par métastases des ces tumeurs se considère obligé a proposer l'énucleation quand le tableau clinique est typique. Il prefère cette solution surtout quand il s'agit des yeux avec la vision perdue ou sur le point d'etre perdue. Le risque d'enucleer un tel oeil semble être plus acceptable que la conservation d'un oeil contenant la tumeur.

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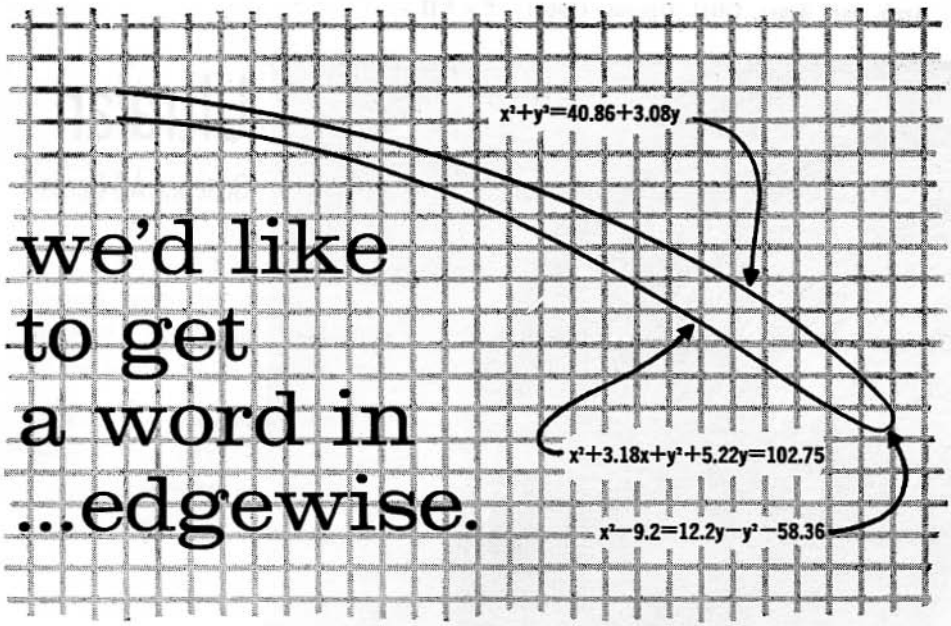

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II) Cryoextraction of the Lens.

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