determine the approximate pressure existing in the ophthalmic artery.

In consideration that the central retinal artery is considerably narrower than the ophthalmic artery, the pressure in it must necessarily be considerably lower, which, however, cannot be determined even approximately.

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PTERYGIUM*

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The great number of operations devised for pterygium, like the many operations proffered for ptosis, bespeaks the frequency of failure in this surgical condition. Recurrence in pterygium operation is the rule in the hands of the experienced, as well as in those of the novice. Having seen a great many pterygia in the past 2½ years, among which were included a rather large number of recurrences, it became increasingly apparent that the usual method of surgical treatment, namely, the McReynolds transplantation, was not functioning too well in the hands of many ophthalmologists. This procedure was the operation of choice of many ophthalmologists with whom I spoke and most men readily agreed that recurrences were all too common. Each seemed to have one modification or another, but all used the McReynolds operation as the basic procedure. It is true that in a good many cases a follow-up was rather difficult, so that the final result was not adequately obtained. McReynolds¹ has stated that his operation was a modification of the Desmarres' procedure, the feature which he introduced being the closure of the exposed sclera following the separation of the pterygium. McReynolds believed that if a break in the conjunctiva occurred in the axis of the palpebral fissure, the results would be more or less unsatisfactory, for the insertion of sutures bringing the divided parts into apposition is bound to produce some thickening, and irritation consequent upon these conditions will serve to excite the neighbouring subconjunctival vessels, and thus cause a return in growth of the pterygium. "By concentrating the vascular activity underneath the lower lid where the pterygium is not only removed from view, but protected from irritating influences of dust and exposure, the process of atrophy naturally and

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Fig. 1.

Shows a typical moderately advanced pterygium of characteristic appearance before operation.

Fig. 2.

Shows the same eye approximately two months after operation.

Surely follows.” It does not seem justifiable to assume that conjunctival approximation cannot be attained adequately in the midline, for in a great many operations the site of union is soon not recognizable. Again “vascular activity need not be concentrated in the lower cul-de-sac”—burial into the squamous-like caruncle would seem to be a much more compatible histological union. McReynolds also emphasized the importance of complete removal of the head of the pterygium with a sharp knife, suggesting that any technique of divulsion should be avoided. The knife should be as sharp as possible and no attempt should be made at tearing the pterygium head from the cornea. This point is worthy of re-emphasis, especially in view of a recently reported operation in the Navy Medical Bulletin.
Pterygium operation

Technique.—The head of the pterygium is grasped with forceps as in any operation for pterygium, and is carefully dissected off the cornea to the limbal area with a sharp knife. The conjunctiva is then separated from the limbus both above and below the pterygium for a distance of three mm. and undermined from the limbus to the region of the newly retracted pterygium head. (It seems that upon undermining the conjunctiva in this area after separation at the limbus, the pterygium also retracts). A double-armed suture is then inserted about 1 mm. from the head of the pterygium going from conjunctival to episcleral surfaces with the thread coming into position vertically. The pterygium is then folded back upon itself so that episcleral tissue is in contact with episcleral tissue and the double-armed suture is brought out through the centre of the caruncle, the needles coming through at 2 mm. vertical separation. The caruncle is punctured with some difficulty, this procedure being slightly painful. The episcleral tissue below the pterygium should be undermined carefully and completely, so that no adhesions hold back the folded pterygium. The suture is then pulled tightly and tied over a small rubber button. This process of folding the pterygium back upon itself produces a tendency toward knuckling of tissues which varies with the broadness of the central portion of the pterygium, and is the one objectionable feature. However, if the pterygium is quite broad, after the head is dissected off the cornea two parallel incisions may be made in the pterygium base separated by a distance equal to the width of the mid-head of the pterygium, and running horizontally for several mms. before folding the pterygium back upon itself. The edges of the conjunctiva are sutured together in a horizontal line starting from the buckled end of the pterygium and going to the limbus. The last conjunctival limbal suture should be placed very carefully and cut quite closely so that no suture ends impinge upon the cornea. 6-0 silk should be used for these sutures. Usually three or four sutures are required to close the conjunctiva completely.

This procedure is adequate and not at all difficult to perform in the mild types of pterygium, but may also be used in the more disturbing recurrent variety. The procedure is much the same although in one instance it was found to be of distinct advantage to use two double-armed sutures, one being brought out at the caruncle and a second coming through the structure of the pterygium itself. The small rubber button prevents the suture from sliding back into the folds of the conjunctiva where difficulty
This is a diagrammatic representation of the various steps in the operation for pterygium. (a) Characteristic pterygium before operation. (b) Pterygium being severed from the cornea and dissected back to its base. (c) Double armed suture placed through pterygium head and emerging from the episcleral side. A small area of conjunctiva is undermined at each limbal area and appears like a small crescent. (d) Each arm of the suture is passed underneath the pterygium and brought out through the caruncle. The pterygium is separated from the sclera with the scissors at its upper and lower borders. (e) The double armed suture is tied over a small rubber button. The upper and lower free edges of the conjunctiva are sutured with three or four single sutures. (f) The conjunctiva is completely approximated.
is usually encountered in removal, and frequently requires cutting down into the conjunctiva. This suture may be retained for ten days. The other conjunctival sutures usually work out readily. A moderate amount of secretion exists for several days but may be handled adequately through the use of hot compresses. The patient experiences some discomfort for two or three days and the operation should be regarded as a major procedure for that post-operative period.

During the past seven months twenty-five cases have been treated in this manner, in which time there has been only one recurrence. These cases have only been followed from two to six months, but in many instances the appearance at the end of two months seems to indicate that there will be no recurrence for the caruncle flattens out, the conjunctiva unites evenly and the opaque cornea becomes thinned out. In the single instance where the result was not considered very satisfactory, the patient had previously been operated upon twice and the involved tissue was hypertrophied and fleshy. There was overlapping and redundancy of tissue after the pterygium was folded back upon itself. Two weeks after the operation the redundant tissue was cauterized with silver nitrate and several days later the appearance was regarded as most satisfactory.

The advantages offered by this type of operation are as follows:

1. The head of the pterygium is brought in contact with the modified cutaneous structure, the caruncle, a structure with which the stratified pterygium appears to be compatible.
2. Episcleral tissue tends to fuse with episcleral tissue (produced by folding of pterygium).
3. The direction of growth of the pterygium is completely reversed.
4. An interposing bridge of conjunctiva is placed between the folded pterygium and the corneal focus.
5. Undermining the conjunctiva at the limbus tends to relax the pull upon the pterygium and prevents overhanging of the conjunctiva at the limbus.
6. Since temporal pterygia are extremely rare they need not be considered.
7. The pterygium is completely buried and is no longer exposed to direct elemental irritation.

REFERENCES