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HORNY EPITHELIUM OR SUMMER GRANULATIONS—ITS RELATION TO CONJUNCTIVITIS TRACHOMATOSA; IMPRACTICABILITY OF TREATMENT BY EXPRESSION.[1]

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CONJUNCTIVITIS TRACHOMATOSA is an affection that is characterized by a peculiar roughness, hyperemia, and swelling of the conjunctiva. These changes are sometimes seen as hypertrophied papillæ, again as diffuse excrescences, arranged in rows on the palpebral fold, and from their shape and gelatinous translucency, resembling the spawn of fish or frogs, but of a slightly pinkish or yellowish tint. The appearance of the conjunctiva is much modified by the greater or less development of these excrescences and hypertrophied papillæ. Thus, from a practical point of view, the distinction of several varieties of the disease is essential, as these differences affect not only the course, but also the treatment and the results of the disease. There is fortunately one rare form, which, while being mixed,

[1] Read before the Pittsburg Academy of Medical Sciences October 2, 1893.

is not the form commonly described in books as mixed trachoma, as that refers only to its association with the papillary form. The form referred to is a variety associated with a pathologic condition, on which we find but little written, but which is spoken of as horny epithelium, or summer granulations. In this affection the external appearance is much the same as in follicular trachoma. There is a redundancy of the upper lid, with slight ptosis, but on everting the lid we find that the granule is apparently displaced by horny or teat-like elevations. These horny excrescences are not the enlarged papillæ described by authors under the head of "mixed trachoma," in which disease the papillæ sometimes enlarge so as to completely conceal the trachoma-granule by overlapping it.[1] Again, in describing trachoma diffusum Stellwag says:[2] "We have large growths which sometimes project like a cock's comb over the tarsal border." These are enlarged papillæ, not granules. I do not refer to these growths. Clinical observation has shown me that in mixed trachoma the granules are in a minority, the papillæ in all stages of hypertrophy, and that when any of the papillæ have developed as large as these horny elevations, they do not otherwise resemble them, inasmuch as they are isolated and pedunculated, but the horny excrescences are cone-shaped or teat-shaped, and not isolated. Nor do we in the papillary form, with extensive papillary hypertrophy, find as even a development, nor is the arrangement as symmetrical. Their appearance

[1] Fuchs: Text-book of Ophthalmology, 1892, p. 74.

[2] Stellwag on the Eye, p. 402.

suggests that these elevations are proliferated trachoma-granules due to some action the cause of which is unknown.

Histologically, trachoma is simply an aggregation of leukocytes in the lymph-follicles, which by their increased number push aside the conjunctival tissue, compressing its fibers in such a manner that it has been mistaken for a fibrous capsule or membrana propria. It differs from the follicle in follicular catarrh in being an *active neoplasm subject to change*. The granules may undergo fatty degeneration, and thus be absorbed, or they may be transformed into tough connective tissue.[1] This is not the case in follicular catarrh, these follicles being simply normal lymphoid spaces not subject to change. They are seldom associated with papillary hypertrophy, and never lead to shrinkage of the conjunctiva, to pannus, or any of the distressing sequelæ of the trachoma-granule, and present the type of a disease devoid of danger, frequently getting well without any treatment whatever, and leaving no trace behind.

The true trachoma-granule, as it increases in chronicity, has its leukocytes converted into connective-tissue fibers, which form a true hypertrophic base to each granule, and which we find in all stages of development in any given case of chronic trachoma. It is not only possible but very probable that, due to some peculiar diathesis, non-hygienic measures, or bacterial influences, we have an exaggerated proliferation of these leukocytes into connective-tissue fibers; we have instead of a simple hypertrophic

[1] Preuss.

base to each granule a continued hypertrophy, until we have these teat-like or horny excrescences, which are known as horny epithelium or summer granulations. These growths are always associated with the trachoma-granule in some one stage of its development; their pathogenesis is the same; their analogy and association with trachoma suggest them to be a later or hypertrophic stage of that affection, fortunately a rare one, not necessarily following every case, but existing in a certain percentage of cases due to some special existing cause not known, and would be better designated under the head of conjunctivitis trachomatosa hypertrophica.

The subject of trachoma, in any one of its forms, has assumed a new interest in recent years, as we have more effective operative measures, and can now cure in a few sittings what we formerly only relieved after long and varied treatment. The treatment by expression which originated many years ago, and which has been carried out with many different contrivances, has now, since the introduction of Knapp's roller-forceps, become generally adopted as the quickest and most effective one, except for the hypertrophic form just spoken of. This form of trachoma, if we choose to class it as trachoma, is not amenable to treatment by expression, there being nothing to express; the teat-like processes are simply squeezed and bruised by the rollers, and the case is aggravated; and so it is to a certain extent with the papillary form and also the cicatricial form. Infiltration cannot be squeezed out, and where the granules are few and scattered the irritation of the hypertrophied mucous mem-

brane by the *undue* pressure of the rollers will cause a reaction not looked for, and little benefit is derived on account of the enlarged papillæ forcing the rollers over the granule, and not permitting proper expression unless *undue* force be brought to bear on the rollers. It is in cases of this kind that operators failed to recognize the importance of the fact that the amount of pressure brought to bear on the rollers should be lessened in ratio to the amount of existing hypertrophy, and that they should not be used unless granules are present. Because of this fact the desired result was not obtained and the forceps laid aside. I have seen three different operators in as many different cities use the roller-forceps in the papillary form when there were no granules present. These surgeons were necessarily disappointed with the rollers as an operative measure.

The recent series of 114 operations of the various forms of trachoma treated by expression, conducted by Dr. Knapp at the New York Ophthalmic and Aural Institute, in which I participated while his assistant, and which are reported in the January number of the *Archives*, 1892, have shown that the forceps is best adapted to that form of trachoma in which there is something to express, namely, the follicular variety. Of 64 cases of this form, 54 were cured at a single sitting; 8 failed to report, and 1 was afterward operated on by the grattage-method. This case I remember was purposely left for two sittings, as a case operated on the day previously, a little girl, showed a deposit of fibrinous coagulum on the conjunctiva of the lower lid of the left eye, which produced a partial entropium. This was torn

up with a squint-hook. Dr. Knapp thought it better to subject the succeeding case to two sittings, as he feared the same result. The patient did not return to have the operation finished, and was afterward operated on by the grattage-method by Dr. Weeks, of New York. I was surprised to hear this case reported at the New York Academy of Medicine some time later, as a relapse of the squeezing-method. In 140 operations I have seen but very few relapses, my first operation, at the Post-Graduate School of Medicine of New York, being one of them. The conjunctiva was profusely studded with granules, but on account of imperfect etherization the granules were not all expressed, to which fact the result may be attributed. To use Dr. Knapp's expression, "the conjunctiva should be milked" with the rollers, applying just sufficient pressure to evacuate the granules, which is very little; the tactile sense alone should be sufficient guide to the operator. It has been asserted in my hearing that one objection to the rollers was that enough pressure could not be brought to bear on them to express the granule, and that the handles were frequently in contact before the desired effect was produced. Such excessive force is an unwarranted procedure, and detrimental to the successful termination of the operation.

It requires less pressure in follicular trachoma, in which the granules are the most profuse, than in any other variety, and most pressure in the mixed form with hypertrophied papillæ; on account of this it is well to treat the latter form with a solution of sulfate of copper for a week or more, until the papil-

lary hypertrophy is considerably lessened, permitting the *granule* to become the more prominent, when it is readily expressed, much less pressure being required.

Dr. Knapp's series of operations has demonstrated the following important facts: First, that the cure of trachoma is not dependent on germicides,[1] the cures resulting from the grattage-method probably being due to the more or less perfect expression of the granule, and not to the incorporation of bichlorid of mercury, to which it is attributed. Secondly, that the granules can be expressed without injury to the conjunctiva; whereas by the grattage-method they are only imperfectly expressed, and then at the expense of mutilation of healthy conjunctiva. Thirdly, that the cure is dependent on the thoroughness of the operation alone.

Too much cannot be said in favor of this recent valuable addition to ophthalmic surgery. By no other means at our command can we so completely eradicate these bodies without injury to the conjunctiva, curing the disease, I may say, in its incipiency, before those many distressing sequelæ appear, which so often destroy vision, and in a very large percentage of cases leave the patient with one or more of those structural changes, as a life-inheritance of a disease over which we previously had but imperfect control. We must on its merits, appreciate the roller-forceps as the operative measure *par excellence* for trachoma folliculaire. Its superiority over the grattage-method is plainly apparent. The inability to completely remove the granule from the

[1] Knapp: Archives, January, 1893.

fornix and bulbar conjunctiva, and the liability to injure the cornea, during the irregular scrubbing-process, combined with the necessary compulsory mutilation of the healthy conjunctiva, in the effort to thoroughly incorporate the bichlorid of mercury into the granule, to say nothing of the frequent relapses and severe reaction, are all well-founded objections to this method. There are no relapses following the squeezing-method, the so-called relapses being simply unfinished operations, due to imperfect expression.

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