

A CASE OF EXOSTOSIS BURSATA.¹

By JAMES BELL, M.D.,

OF MONTREAL.

SURGEON TO THE MONTREAL GENERAL HOSPITAL.

I BEG to submit the following report of a case of exostosis bursata, a pathological condition which has not yet, as far as I am aware, been described in English or American literature.

A. B., a strongly built, well-nourished, healthy young man, æt. 20, came under my notice in the General Hospital in March last (1888). He complained of a tumor on the inner side of the lower end of the right femur. It had been first noticed nine years prior to admission, when, he states, it was as large as a marble, soft and movable. It had grown steadily ever since, and only became fixed and firm four years ago, but had never been painful or tender. It gave rise to no inconvenience until within the last few months during which he had felt a sense of inconvenience and fatigue in the muscles in going up or down stairs, or on over exertion. On examination it was found to be situated over the epiphyseal line at the lower end of the femur on its inner border, was as large as a baseball, apparently pedunculated and with very indistinct outlines. On April 4, I proceeded to remove it, and, in cutting down upon it, I found it enclosed in a synovial-like sac which contained about an ounce of amber colored, slightly viscid but clear, fluid exactly similar to the synovial fluid of the knee joint. In this fluid floated 55 small cartilaginous bodies varying in size from that of a pea to a large bean, and exactly corresponding to the floating cartilages occasionally found in joints, especially in the knee and elbow. When exposed, the bony growth which was about the size of a Fameuse apple was found to be attached to the linea aspera below the

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epiphyseal line by a bony pedicle about three-quarters of an inch long, and half an inch in diameter. It was directed upward and inward at an angle of about 45° with the long axis of the femur. The surface of the tumor was irregular, and was covered with small, isolated pieces of cartilage arranged in the form of a rough mosaic so as to form a continuous layer over its whole circumference down to the attachment of the pedicle. The sac which became continuous with the periosteum at its attachment to the *linea aspera* was lined with a membrane, which, on subsequent examination, was found to be identical with the synovial membrane of the knee joint. The fluid contents of the sac were lost so that no analysis could be made, but the cartilaginous bodies were found to consist of hyaline cartilage. The tumor was removed by sawing through the pedicle with a chain saw, dissecting away the sac and chipping off the femoral attachment of the pedicle with a chisel. The patient made a rapid and uninterrupted recovery. This form of growth must not be confounded with the ordinary exostoses which are not infrequently found growing from the epiphyseal lines of the long bones, and is distinguished from the latter by its cartilaginous surface, synovial sac and fluid, and the presence of free cartilaginous bodies.

Only two cases of extra-articular exostosis bursata have been recorded up to the present time, and both by German surgeons. The first case was reported by Billroth in 1863. The synovial sac in this case contained 35 free cartilaginous bodies. It was carefully studied by Rindfleisch, who came to the conclusion that it had originated as an *ecchondrosis* of the cartilage of the joint which had pushed out a portion of the synovial membrane which, in time, had become cut off from the joint and formed a separate sac for the tumor. The second case occurred in Bergmann's Klinik in 1884. In this case the synovial sac contained about 500 loose cartilaginous bodies (486 were collected). This case and the preceding one (Billroth's) formed the subject of a paper entitled "*Zur Casus-tic der Exostosis Bursata*," read by Dr. Fehleisen before the 14th Congress of the *Deutschen Gesellschaft für Chirurgie* in Berlin in 1885. Two cases of intra-articular exostosis cartilaginea have also been described, the first by Volkmann, and the second by Erhardt. These tumors seem to have been identical in other respects with the extra-articular cases of Billroth

and Bergmann, and with the case which I have just described, but, as I have not had access to the detailed report of those cases, I cannot speak positively regarding them. Fehleisen explains the origin of these growths according to Cohnheim's theory of embryonal error, whereby a group of cells at a very early period of foetal life becomes separated from the border of the joint elements, and existing during the formation of the skeleton as an indifferent cell mass; only later becomes differentiated from the epiphysal cartilage, and finally develops into a misplaced growth of bone, cartilage and synovial membrane. Fehleisen, in examining Bergmann's case, discovered in the tufts of the synovial membrane hyaline cartilage cells. Volkmann states that he has observed free cartilaginous bodies similar to those found in connection with exostosis bursata in a pseudo-arthritis of the femur, and claims from this observation, as well as from the frequently observed existence of free seed-like bodies in ganglia of the extensor tendons, that the synovial membrane is not an essential element in their production. He claims that exostosis cartilaginea always originates from the epiphysal cartilage, or the joint cartilage, according as it is extra or intra articular, and that for an explanation of this condition, it is not necessary to resort to Cohnheim's theory. It is also suggested that traumatism by disarranging the columns of cells in the outer layers of the epiphysal cartilage may be the cause of such columns developing in an abnormal direction. Whatever the explanation may be, it is quite clear that in the extra-articular cases described by Billroth and Fehleisen, as well as in the case which forms the subject of this paper, the growth was quite distinct, both from the joint and from the epiphysal cartilage. .

This subject, however, has a most important bearing upon the explanation of the existence of floating cartilages, as they are called, which are so often found in the knee joint, and less frequently in the elbow joint. It appears to me that the most natural explanation of the existence of these bodies in joints is that offered by Fehleisen whereby the cartilage cells existing in the tufts of the synovial membrane develop into small cartilaginous bodies which are set free, and float loosely in the synovial fluid. The many explanations hitherto offered

for the existence of those bodies, such as inflammatory processes, quiet necrosis of cartilage, etc., have entirely failed to offer a satisfactory solution of the question of their origin.

TUBERCULOSIS OF THE SACRO-ILIAC JOINT.— (CONCLUDED).

BY WELLER VAN HOOK, M.D.,

OF CHICAGO.

WE must now leave the discussion of the "dry granulating" form of the disease and consider the "moist" or "cold abscess" form. The former exhibits a tendency, as has been seen, toward local limitation; the latter is locally aggressive, tending to infect by successive ruptures of its abscess walls as well as by inherent microbic energy, tissues previously healthy. The first form is under favorable circumstances inclined to recover; the second is equally inclined to terminate fatally. We may therefore expect the treatment to be entirely different.

It is unnecessary here to discuss the constitutional remedies to be adopted in abscess cases, since the question is one rather of medical than surgical therapeutics. For no general treatment has been found that can operate upon local tuberculosis except in an indirect way. But, far from neglecting this branch of treatment, the surgeon will carefully study the constitutional condition of the patient and endeavor to improve it as far as possible.

The local treatment of sacro-iliac tuberculosis with abscess formation now admits, as I believe, of definite formulation, within certain limits. We have seen how successful has been the treatment by rest, systematically applied, in cases which did not present cold abscesses. We then concluded that, if our statistics representing 94.1 per cent. of recoveries were borne out by future records, there would be no reason for undertaking a different plan of treatment. But when abscesses have formed the death rate springs from 5.9 per cent. to 92.1 per