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SYMPOSIUM: HIGHLIGHTS FROM THE FIRST COMBINED 2011 MEETING OF THE MUSCULOSKELETAL TUMOR SOCIETY AND CONNECTIVE TISSUE ONCOLOGY SOCIETY

The Classic

Case of Osteo-Sarcoma of Tibia, Recurring in Stump of Thigh, and Probably Affecting the Lung

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Abstract This Classic article is a reprint of the original work by Mr. John Ewens, "Case of Osteo-Sarcoma of Tibia, Recurring in Stump of Thigh, and Probably Affecting the Lung." The case is of interest, because the findings contradicted an existing idea, "that large malignant growths, springing from the long bones, do not, after amputation, if the whole of the diseased structures be removed, return in the stump, but at some distant part; and, therefore, it is not necessary to amputate above the knee in the case of the tibia, or at the hip-joint in the case of the femur." In Mr. Ewen's case, an osteosarcoma of the tibia was treated with above-the-knee amputation, but, in fact, it recurred in the stump. The mechanism was unclear but could have arisen from the presence of a multifocal lesion in the femur, seeding at the time of amputation (details of the amputation were not provided, although the site of the tumor was apparently not involved), or perhaps subsequent metastasis from elsewhere to the stump. Mr. Ewens was a surgeon at the Hospital for Sick Children in Bristol, England. (No other information on Mr. Ewens could be located, and we have no accompanying biographical sketch.) The Classic Article is © (1878) and is reprinted from Ewens J. Case of Osteo-Sarcoma of Tibia, Recurring in Stump of Thigh, and Probably Affecting the Lung. *Brit Med J.* 1878; Feb 9;1(893):192–193.

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The British Medical Journal of December 29th, 1877, contains a report of osteo-sarcoma of the femur, with death from subsequent deposit in the lung, read before the annual meeting of the Association in August last, by Mr. Heath of Manchester. As the following case seems to be in some respects somewhat antagonistic to the conclusions arrived at by Mr. Heath, in connection with the opinion of the late Sir W. Fergusson, it will not, I think, be without some practical interest.

A boy, aged 8, was admitted into the Hospital for Sick Children, Bristol, in May 1876, with a large tumour of the upper extremity of the left tibia. The history given was that, some weeks before, he had been struck by a stone flung by another boy, and that he had walked some distance in the snow, and got chilled. The very rapid growth and general appearance of the tumour led to the diagnosis of malignant disease, and that nothing but prompt amputation far beyond the limits of disease could afford the least chance of saving life. The inguinal glands, though more distinct than usual on account of the extreme emaciation, did not appear to be diseased. There was no abdominal tenderness, or evidence of any visceral disease. Amputation was performed by the circular method about the middle of the thigh. The wound was dressed with carbolised oil, and the arteries tied with carbolised catgut. Rapid union of the deep structures occurred by first intention, and the patient was discharged quite well in about a month. The whole of the upper third of the tibia was involved in the malignant growth, which also extended into the joint (but did not invade the femur) and for a considerable distance down the cancellous tissue of the bone. The soft parts were also extensively involved. Unfortunately, the hospital cards containing detailed notes as to circumference of the tumour, etc., have been lost or mislaid.

On October 14th, the boy returned with a tumour, of the size of a small orange, on the inner and anterior side of the stump, which, he said, had been growing about six weeks. It was not very painful, and was somewhat movable, and probably had deep attachments. He said it had commenced on the surface. The inguinal glands were not tender or materially enlarged. His general health was wretched; hurried respiration; quick pulse; leading me to suspect extensive disease of the lung. On examination, dulness with extensive crepitation over the whole of the posterior aspect of the chest was detected. The only question remaining was the propriety of removal of the stump at the hip-joint, but this was negatived after further careful examination of the amputated limb (which is now preserved in the museum of our medical school), the femur being found free from disease; and the inference was that, as the whole of the diseased structures had been removed, the malignant cachexia was so decided as not only to reproduce the disease in the stump, but most probably the lung-affection was of a cancerous nature. He was therefore discharged, and lived about a month. I visited him about a week before his death, and found that the tumour had rapidly increased in size and appeared as though it would soon ulcerate; but this did not occur, and the chest-disease was the immediate cause of death. As he lived ten miles from Bristol, no *post mortem* examination could be obtained.

It appears to me that this case proves an exception to the rule laid down by Sir W. Fergusson, referred to by Mr. Heath, " that large malignant growths, springing from the long bones, do not, after amputation, if the whole of the diseased structures be removed, return in the stump, but at some distant part; and, therefore, it is not necessary to amputate above the knee in case of the tibia, or at the hip-joint in case of the femur".

Now, in the case I record, it is obvious that the disease did return in the stump—whether prior or subsequently to the lung-disease I cannot say—and that it progressed with a rapidity which would have speedily of itself proved fatal; and yet it was my own opinion, and that of my colleagues, that I operated far beyond the limits of disease then apparent. Hence it would seem to be impossible, with certainty, to promise immunity from a return of this formidable disease, whilst in suitable cases we must not hesitate to amputate.

Mr. Holmes (*Surgical Treatment of Children's Diseases*) in the course of his observations on this subject, says (second edition, page 334): "Usually, however, the case proceeds very differently; the malignant deposit reappears in the course of a few weeks after removal of the limb, either in the glands or in the interior of the body."

Mr. Erichsen (*Science and Art of Surgery,* seventh edition, vol. II, page 207), in connection with this subject, says: "I believe that return is much more speedy and certain after amputation, in the peripheral than in the central form of malignant disease of bone, provided that in the latter the whole of the bone has been removed; this is due to the more extensive contamination of the soft parts in the former than in the latter case." Again, "If the limb be removed in the *continuity of the diseased bone*, there must necessarily be a great probability of a very rapid return of the morbid action in the stump; and this probability amounts to a certainty in those cases in which the disease is central, and in which the whole of the medullary canal and cancellous structure are implicated and infiltrated with cancer. In cases of peripheral disease, this return in the same bone may not take place"; but, as there can be little certainty about the matter before operation, he advises removal at or above the next joint. Further on, he observes: "In some forms of malignant bone-disease, however, the muscles inserted into the affected bone often become speedily contaminated, and this contamination may spread widely through the substance or along the sheath of any particular muscle. Hence, I think the rule in these cases should be to amputate not only above the diseased bone, but, if practicable, above the origins of the muscles in the neighbourhood of the disease."

As the disease did not return either in the glands or the bone, and the site of the recurrent tumour corresponded to the cut end of the sartorius, it appears to me to be an example of that form described by Mr. Erichsen, of infiltration of this muscle spreading upwards from its tibial insertion. Of course, his suggestion to amputate "above the origins of the muscles in the neighbourhood of the disease'' could not in this case be adopted. It is very unfortunate that no *post mortem* examination could be obtained, as it would have cleared up any ambiguity as to the condition of the internal organs and the exact relation to the bone of the tumour in the thigh.