Case of painful crepitation in the course of the radial extensor muscles of the carpus / [Robert Knox].

CASE

OF

PAINFUL CREPITATION

IN THE

COURSE OF THE RADIAL EXTENSOR MUSCLES OF THE CARPUS.

READ TO THE MEDICO-CHIRURGICAL SOCIETY IN EDINBURGH.

British surgeons, engaged in extensive practice, are but little in the habit of recording interesting cases occurring to them, and to this I ascribe the fact of there being no recorded instance of an accident, which I must suppose to be at least as common in this country as in France. The accident to which I allude is the formation of air apparently within the synovial sheaths of the radial extensors of the carpus, chiefly situated at that part where they are in contact with the extensors of the thumb which play over them. I feel desirous of learning from my fellow members if such cases be rare or the opposite; so frequent, perhaps, and deemed so trifling that they do not merit *publication*. I cannot, however, find any notice of them in British writers, although it is quite possible that such may exist and have escaped me.

I shall first relate the case, and next offer a very few remarks respecting it.

A friend of mine, a middle aged man, tolerably muscular, whilst amusing himself with angling for the greater part of a day, used a fishing rod, not only very heavy altogether, but likewise top-heavy. Towards the afternoon he observed that the right fore-arm had become painful and swollen just over the part where the extensors of the thumb cross the radial extensors of the carpus; and applying the hand to the part, was surprised to find a most distinct and extensive crepitation extending upwards and downwards to the extent of four or five inches. On applying my hand to the part, I felt precisely what has been just described, that is, a painful crepitating

irregular tumour, so that no doubt remained in my mind of there being an extensive effusion of air in the line of these muscles, either within the bursæ mucosæ, or in the cellular substance. It is natural to think that the air would collect first within the synovial membrane, but whether or not it ultimately penetrated into the cellular tissue, it is impossible to affirm. This case occurred nearly five years ago. I knew of no similar ones at the time; but aware that those who practise most write least, I applied to several of my surgical friends to gain information on this point, but without success; some even doubted the possibillty of the occurrence.

A short time ago the circumstance was recalled to my recollection by the publication of portions of a very excellent memoir by M. Poulain. The original paper first appeared in the "Gazette Medicale," (parts 24 to 27,) from which judicious extracts were inserted in the "Lancet" of July, 1835. From this it would appear that the accident is rather a common one in Paris, and was originally discovered by Boyer — that it is frequently met with in the arms of blacksmiths, masons, wood-cutters, washerwomen, &c.; and that it has been met with in the sheaths of the peroneal muscles, as well as in those of the radial extensors. A reference is made by M. Poulain to M. Velpeau's writings for the fullest account of the disease.

On referring to M. Velpeau's observations, and others, it would appear that such cases are not rare in France, and it will be interesting to myself, and perhaps to others of my fellow members, to learn from those having more ample opportunities for observation, if they have met with such cases —if they are frequent or rare—and if they get better, as mine did, without any surgical treatment, leaving, however, a slight pain, on exertion, in the affected part, and a weakness felt sensibly whenever the hand is carried violently from the supine to the prone state, or rather when this motion comes to be frequently repeated.

It will hardly be necessary to remind the Society, that as yet there has been no analysis of the air formed in this very peculiar situation, and that its mode of formation is necessarily extremely obscure; in my own case, the air was most evidently produced by an action continued for many hours, necessitating, perhaps, a supply of synovia beyond what these forms of bursæ were equal to; when this anti-friction fluid failed, air was then poured into the synovial sheaths of the tendons; but all this is mere conjecture, and must continue to be so until an opportunity occurs of inquiring anatomically into the

pathology of the disease. Lobstein thinks that a little air may always be found in the meshes of every synovial tissue.

Mr Boyer, with whom originated the discovery of this disease, seems to me, properly enough perhaps in a surgical point of view, to deem its consideration unimportant, mentioning it only while describing fractures of the radius, with which he observes it might be confounded by inexperienced surgeons. Yet he properly enough, as a pathologist, calls it "a singular affection," describing it as a "collection of air in the cellular tissue, surrounding the long abductor muscle and short extensor of the thumb."

To this opinion of Mr Boyer, in respect to the actual situation of the air so formed, it seems to me impossible to subscribe; it is neither in itself probable, nor founded on any pathological views. But there does seem to me an anatomical peculiarity in respect to the parts of the body, most liable to the accident, which, so far as I know, has escaped the notice of anatomists.

With whatever care the filamentous tissue surrounding the radial extensors and extensors of the thumb, where they cross and play over each other in pronation and supination, be examined, no distinct vagineform synovial bursæ can be made out; the structure, it is true, is unlike common cellular tissue, but still is not a bursa mucosa, nor a synovial capsule strictly; neither, excepting by a very strained analogy, can it be compared to a multilocular synovial capsule. The same remark applies, I venture to think, to the sheath of the plantaris longus, as it lies betwixt the soleus and gastro-cnemius, and, though perhaps not always, to the central tendon of the omohyoideus muscle.

It is difficult to arrange the kind of texture I speak of, since it seems to hold an intermediate place between multilocular synovial bursæ, and common cellular tissue.

It is *in this texture* that, in by far the greater number of cases, air has been generated pathologically; and in this opinion I venture, with great deference, to differ from Boyer and Poulain; the former assigning as a locality to the air so collected the common cellular sheaths of the muscles generally; the latter, with Dr Velpeau, believing its seat to be exclusively in the interior of real synovial bursæ or capsules, whenever they exist, whether investing tendons and their fibrous retinacula, or forming an essential part of moveable articulations.*

* On one occasion, some years ago, a case occurred, in which I did think that air had collected in the knee joint.

To this opinion there is this strong objection, that nearly all the well marked cases which occurred to Messrs Poulain and Velpeau, happened in the fore-arm, at the point indicated in my own case, and where it is certain that no well marked synovial bursæ exist. I cannot find an undoubted case of its happening to any of the moveable joints, and those said to have happened within the bursæ of the peroneal tendons, where they are retained by the "retinacula," appear to me at the least very doubtful. What Mr Poulain says about the "tendinous sheaths of the muscles," is not easily understood, more especially when he describes amongst these *tendinous sheaths*, the general aponeurosis of the limbs; betwixt these tendinous sheaths, and the muscular masses, there lies chiefly common filamentous tissue, into which, if Mr Poulain imagines the air to be generated, he must support the opinion of Boyer. But, on the other hand, he maintains the views of Velpeau, who views this pathological condition as being confined to the interior of real synovial capsules.

These are contradictions in the otherwise excellent memoir of Mr Poulain, which I am not bound to reconcile, admitting, however, that it is quite possible I may have misunderstood this gentleman's views. From these data and considerations, I venture to draw the conclusion, that, besides the well marked synovial capsules, forming an essential part of all moveable articulations, and the bursæ mucosæ, distributed throughout the body wherever great friction, usually or occasionally, takes place, there exists an intermediate structure analogous to it, and which supplies its place. This structure is found in connection with the following muscles, the radial extensors of the carpus, and extensors of the thumb, the plantaris longus, and omohyoideus; and that it is in this structure only, and more especially as it surrounds the radial extensors, that air is generated pathologically, or at least, that it is here that it has been most frequently and most satisfactorily observed.

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