REMARKS ON THE TREATMENT OF BACKWARD DISLO- CATION OF THE THUMB (FIRST PHALANX).

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THE literature on this subject is already so abundant that it may be doubted whether there is room for anything further to be written which shall be of practical value. Besides innumerable papers in the Medical Journals and Transactions, there are over twenty monographs in French and German on Dislocation of the Thumb to reward the search of the industrious reader, and nearly all of them are concerned with the most common form, namely, the backward dislocation of the first phalanx, and the cause of the trouble such displacement sometimes gives to the surgeon. Two of the papers may be singled out as being of special value: one, an extremely full account (well illustrated) by M. Farabeuf, of Paris; the other, some valuable lectures by Mr. Battle, reported in the *Lancet*, December, 1888. M. Farabeuf, with his unrivalled anatomical material and experience, has probably said the last word on the pathology of dorsal dislocation of the phalanx; and that last word we may fairly quote (with slight modification) as follows:—"In the backward dislocation of the thumb the phalanx counts for nothing, the sesamoid bones and the glenoid ligament for everything." His elaborate classification of the varieties of this dislocation we need not trouble about, although it is based on no fewer than a hundred *post-mortem* experiments. The only cases that prove really difficult to reduce are the "complete" ones, those illustrated by Fig. 1, copied from Professor Helferich's *Hand Atlas of Fractures and Dislocations* (1897 Edition). It needs no explanation; but attention may be drawn to the position of the long flexor tendon of the thumb, which lies

Fig. 1.

to the ulnar side of the metacarpal head. This is its usual position, and the question arises whether the displaced tendon ever accounts for difficulty in reduction of the phalanx. Since several writers have asserted this in a positive manner, we must accept it as of occasional occurrence, but for practical purposes we may concentrate our attention on the sesamoid bones and the glenoid ligament.

It is well known that the two surfaces of the metacarpal head and the phalangeal base correspond very imperfectly in dimension, and that the latter can only be in contact at any one moment with a small portion (estimated at two-fifths) of the former. This is illustrated by the accompanying figure (Fig. 2), the thumb being slightly bent, and A being placed over one part of the metacarpal head which is not touching the phalanx. The cavity is, however, enlarged by the glenoid fibro-cartilage

Fig. 2.

(indicated by C) in which the sesamoid bones are developed. One of these is indicated by D. The transverse fibres of the fibro-cartilage are extremely strong, and it is highly improbable that in a backward dislocation the connection between the two sesamoid bones is ever torn. It may also be noted that the lateral ligaments consist of two bands, one (B) passing to the side of the phalanx, the other (A) to the sesamoid bone and the glenoid fibro-cartilage. In fact, the only weak point of the antero-lateral part of the joint capsule is at the proximal end of the fibro-cartilage—a so-called anterior ligament, which is but loosely connected with the neck of the metacarpal bone. This portion is torn through with ease when the phalanx is violently pressed backwards (hyper-extended). We may consider the glenoid fibro-cartilage and its two sesamoid bones as forming an integral appendage to the base of the phalanx, and as invariably accompanying it in the case of dislocation; and further, that in the great majority of cases this appendage forms the sole obstacle to reduction. That the two heads of the flexor brevis tend to "button-hole" the broad metacarpal head is not denied, but this action is not probably of much importance, or else the difficulty of reduction would not persist when the muscle is fully relaxed by deep anaesthesia and flexion of the carpo-metacarpal joint. It is further proved by the cases in which the surgeon has divided one head of the flexor brevis, and been mortified to find that reduction has not been facilitated thereby. Such cases are rarely published, but I have personally known of one or two, and would venture to assert that the proceeding is not good surgery.

Fig. 3.

All incisions on the palmar aspect of the joint are to be avoided. Fig. 1 shows that the division of the muscles on one side of the metacarpal head implies a very considerable section which can hardly fail somewhat to weaken the thumb. And after the outer head of the flexor brevis and the abductor are completely divided, the sesamoids and glenoid ligament still remain to hinder reduction. Presumably they

can be forced to the other side of the metacarpal head, but by the method of reduction now advocated each sesamoid slips to its respective side and allows the metacarpal to pass between them. Another objection to the method just referred to is that the collateral artery of the thumb will probably be divided at the same time as the flexor brevis, whereas the section of the glenoid ligament from the dorsum can involve no hæmorrhage, and the knife cannot possibly be introduced too deeply, since the neck of the metacarpal prevents this. Fig. 3 will explain the position of the puncture, for which a tenotome or narrow-bladed scalpel is required. It must be understood that the knife is introduced just behind the base of the phalanx, opposite to its centre and right on the dorsum of the thumb, the extensor tendon being easily avoided.

The displaced glenoid ligament is divided as it lies on the back of the metacarpal bone, the knife being made to cut downwards until its point is stopped by the base of the phalanx. I am led strongly to recommend this method of division of the glenoid ligament from the dorsal surface from a personal experience of three cases, in each of which it succeeded admirably. It may be asked whether the section was actually required in all three. In the first two cases the patient had been anæsthetised, and prolonged efforts at reduction made by others without success, and I resorted to the tenotome only after renewed failure of the manipulation method. The latter is so well known that it is hardly necessary to describe it here. As Farabeuf pointed out, the metacarpal bone should be flexed and adducted, whilst the dislocated phalanx is hyper-extended to a right angle with the former. Then traction is made on the phalanx in a line parallel to the long axis of the metacarpal, so as to slide the sesamoid bones, etc., over its head. There are several well-known methods of obtaining a firm grip of the first phalanx during this manipulation. In my third case (where attempts at reduction in other hands had also failed) I resorted almost at once to the division of the glenoid ligament. At the same time one would freely grant that most cases can be reduced without section by the method briefly given above. But, in my opinion, the section of the glenoid ligament is such a trifling matter, so easy to do, and so certain in its result, that it is preferable to prolonged traction and manipulation. It is true that Farabeuf speaks of "the relatively short and slight manœuvres which suffice to reduce metacarpo-phalangeal dislocations." This optimistic view is hardly borne out by some of the cases he refers to, or, for instance, by the following example:

Faucon² narrates that in 1862 he saw at Strassburg a case in which prolonged and fruitless efforts at reduction were followed by gangrene of the thumb, and "if his memory did not fail him, by the death of the patient from purulent infection." Many surgeons have admitted they have occasionally failed in effecting reduction. Vidal quotes Dupuytren as giving up the attempt 24 hours after the accident, Boyer after 10 days, Pailhou after 24 hours. Malgaigne declared that there was no dislocation so often found to be irreducible. Ballingall³ reported no fewer than six cases in which efforts at reduction failed. This, however, was before the rôle of the sesamoid bones and the modern manipulation method were known.

I should be sorry if it were thought that there is anything original in the advocacy of subcutaneous division of the glenoid plate between the sesamoid bones. It would indeed be difficult to decide to whom the merit of the suggestion belongs; it certainly dates back as far as the time of the great French surgeon, Desault. But it is certain that this simple and effective measure is not widely known, or we should cease to find extensive tenotomies and troublesome efforts at hooking aside the thumb muscles advocated. Professor Hellerich, in his admirable work already referred to, makes no mention of the division of the glenoid ligament, although in Duplay and Reclus's *System of Surgery* (published some few years previously) it is described and figured. German authors, it may be noted, are sometimes rather oblivious of French ones, and *vice versa*.

In one of the best and most recent English works on surgery,⁴ Mr. Marmaduke Sheild writes: "Should reduction prove impossible, open arthrotomy should be at once performed by a free incision on the palmar aspect. Resisting structures, as portions of ligaments, or the short flexor

tendons, may be divided or pulled aside with a fine hook, and thus reduction be effected. In old cases the base of the phalanx may be excised. I would advise this treatment in preference to subcutaneous tenotomy; for I have seen failure to reduce this dislocation on more than one occasion, even when the operator had divided the structures round the joint with the tenotome so freely and repeatedly that there appeared little left." The reasons for differing entirely from this teaching have already been given. One or two examples may be quoted of operation other than section of the glenoid ligament.

Surgeon-Captain F. J. Greig⁵ was obliged to operate on a recent case of backward dislocation in a soldier, reduction by other means being impossible. A two-inch incision made over the palmar aspect of the joint exposed the metacarpal head lying fixed between the heads of the flexor brevis muscle. These latter being hooked aside the dislocation was reduced after some manipulation. The wound did well, but stiffness of the joint continued for some time.

In a case occurring at St. Thomas's Hospital⁶ it was found necessary to divide both heads of the flexor brevis pollicis before reduction could be effected. The patient was a boy, aged 12, and the ultimate result could not be stated. To justify the contention that the methods (other than dorsal section of the glenoid plate) are defective, one more instance may be quoted.

Professor Polaillon⁷ in a recent case of complete backward dislocation of the first thumb phalanx, after the failure of manipulation under anæsthesia, determined to operate. On the fourth day after the accident an anæsthetic was given, and the external lateral ligament was divided (probably also the flexor brevis, head, etc.). Reduction was then effected, but the phalanx remained in an adducted position, and within a month the patient was readmitted with recurrence of the backward displacement. Resection of the metacarpal head was then performed, and a fair result obtained.

I think it is unnecessary to adduce other examples, and would submit the following propositions:

1. In backward dislocation of the first thumb phalanx, a careful trial should be first given to the manipulation method described so well by M. Farabeuf and others.
2. If this fails a tenotome should be introduced from the dorsum behind the projecting base of the phalanx, so as to divide the glenoid ligament and allow the sesamoid bones to slip on either side of the metacarpal head.
3. This method of section divides no important structures, is perfectly safe if aseptic precautions be observed, and will not interfere with the subsequent utility of the joint. It is therefore preferable to all methods involving a palmar incision.

The fact that many cases have been recorded of old unreduced backward dislocation of the phalanx bears eloquent testimony to the difficulties sometimes encountered by the surgeon at first. As a rule, excision of the metacarpal head has been resorted to in these cases, for the disability is usually so marked as to justify an operation. A good result has been obtained in this manner in one case six months after the bone first slipped out of place.⁸ I have known one case in which it remained unreduced at the end of a year from the accident.

The subject of dislocations of the thumb, other than the backward variety, may be briefly referred to. The late Professor J. Wood showed at the Pathological Society⁹ a dissection of an old unreduced forward dislocation of the first phalanx of the thumb. It had been complicated with a fracture of the metacarpal neck, which may have rendered reduction difficult. "The new joint had apparently been a tolerably useful one." My colleague, Mr. F. S. Eve, exhibited a similar specimen (now preserved in the Museum of St. Bartholomew's Hospital) taken from a recent case. Reduction was found to be easy by extension when the specimen was dissected. It is a significant commentary on the fact that rarities only tend to be shown at societies and recorded, that these two are the only cases of dislocation of the thumb mentioned in the *Pathological Transactions*, both illustrating a form extremely uncommon compared with the backward dislocation.

It may be asked whether the method of section of the glenoid ligament from the dorsal surface is ever required in the case of dislocation of other digits than the thumb. Un-

doubtedly some examples occur (particularly of dorsal dislocation of the index first phalanx) in which great difficulty is met with in reduction. M. Polaillon¹⁰ showed three cases, two concerning the index and one the ring finger, of dorsal dislocation which resisted all attempts at reduction under anaesthesia and remained out of place. In all such cases it can hardly be doubted that the real difficulty is in the glenoid ligament, and its division may be recommended with confidence should the ordinary manipulation fail.

Finally, it may be said that with the correct understanding of the part the sesamoid bones and the glenoid ligament play in backward dislocation of the thumb, and with a resort to the simple method of operation already described in cases otherwise irreducible, all the difficulties of this much discussed subject practically disappear.

NOTES AND REFERENCES.

¹ A mistaken attempt has been made in one of the most recent works on anatomy to do away with the glenoid ligament of this articulation, and to describe merely "sesamoid bones in place of a glenoid ligament." It is hardly necessary here to combat this view. ² *Bull. de la Soc. de Chir.*, Tome iv, 1878, p. 743. ³ *Edinburgh Medical Journal*, 1815, p. 188. ⁴ *Treves's System*, vol. i, p. 592. ⁵ *BRIT. MED. JOUR.*, August 24th, 1895. ⁶ Mr. W. H. Battle, *Lancet*, December 22nd, 1888. ⁷ *Affections Chirurgicales des Membres*, 1895, p. 451. ⁸ Mr. T. Bryant, *Manual of Surgery*, vol. ii, p. 372. ⁹ *Transactions*, vol. iv, p. 250. ¹⁰ *Loc. cit.*, p. 452.

CLINICAL REMARKS

ON

CATHETERISATION OF THE MALE URETERS UNDER ELECTRIC LIGHT.

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THE MODE OF EXAMINATION.

SINCE the introduction of the electric cystoscope it has been foreseen that the next important step in the progress of precise urinary surgery would consist in an easy method of catheterising the male ureters. It was felt that once this manœuvre was rendered practical, much of the obscurity in surgical renal disease would disappear, many of the false impressions we still retain about the symptomatology would be effaced, and the mortality of nephrectomy would be assuredly lessened. It is generally allowed that the female ureter is easily entered and traversed by a suitable catheter guided either by the finger (Simon, Pawlik), or by the eye (Newman, Hirst, Hamill, Kelly, Goldschmidt); but the disappointment caused by the failure of Brenner's instrument in 1889 has rendered us sceptical as to the possibility of guiding an instrument into the male ureter under electric light.

This manœuvre is, however, possible, and has been now in active use for two years. Not only is it practical in most cases, but to the dexterous it is easy. It will probably be easiest to those who have studied the varying positions and aspects of the ureteral mouths under electric light, and to those who have become adepts in guiding fine bougies under electric light over the mouths of false passages in the strictured male urethra.

Fingers and eyes thus skilled can engage most ureters in a couple of minutes, provided a suitable cystoscopic instrument is employed. I wish, however, before drawing attention to the instrument, to dissent somewhat strongly from the opinion of one surgeon, who asserts it can always be performed in the consulting room under cocaine. Of course it may be done, but not, I submit, with safety. No harm can follow when there is little chance of inflammatory reaction (cystitis, pyelitis, suppression) resulting. Thus it will probably do no harm to catheterise ureters in one's room, provided the patient has not reached 45, the urine is quite clear, the kidneys are healthy, and that no tuberculosis of the urinary tract is present. But under such healthy conditions the procedure is not called for.

It will probably be found that those patients who really need ureteral exploration for obscure disease possess kidneys too sensitive to ureteral or urethral shock to permit any risk of a subsequent chill being run. The immediate and remote death-rate due to washing out the bladder in cases in which pyelitis or irritable explosive kidneys coexist is sufficiently

high to discourage anyone from washing out that viscous in one's consulting room for the first time—a requisite in catheterising ureters; in fact, to do so at all, except under the most favourable circumstances of rest and warmth.

If the ureter has to be explored, let it be done with care and caution, let the patient be in bed, and remain there quietly for a few hours after the examination.

THE INSTRUMENTS.

Several forms of catheterising male cystoscopes are on the market, but as yet they fall mainly under two patterns—the Nitze and the Casper. As will be seen from the accompanying Figs. 1 and 2, both consist in a cystoscope

Fig. 1.—The Nitze Male Catheterising Cystoscope.

Fig. 2.—The Casper Male Catheterising Cystoscope.

with its usual electric lamp L, its prism P, and its telescope. Attached to one side is a channel for the catheter c to run in. This is so placed as to allow the point of the catheter to emerge into the bladder under the eye of the operator. He is thus able to guide it into the mouth of the ureter.

It is difficult to say which instrument will find the greatest favour. Both are valuable, both need, in my opinion, improvement. For my own part, I work the Casper without difficulty, and prefer it because the point of the catheter can be so easily manipulated through a large angle by pressing on the ring D.

This instrument is introduced into the bladder, the catheter lying hidden in its channel. The mouth of the ureter selected is brought into view, and the catheter is pushed along its groove until its point is seen to emerge. A little movement of the cystoscope itself, or manipulation of the ring D, to alter the angle, or a slight rotation of the catheter, is sufficient to guide the latter into the mouth of the ureter (Figs. 3 and 4) and it can now be watched swelling up the wall of the bladder as it passes up the ureter. In a few seconds urine will drop from the end of the catheter, and may be collected in a test