

**Rickety deformities of the lower extremity : their treatment by operation /
by Edmund Owen.**

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Owen, Edmund, 1847-1915.
Bryant, Thomas, 1828-1914
Royal College of Surgeons of England

Publication/Creation

[London] : [Practitioner], [1888]

Persistent URL

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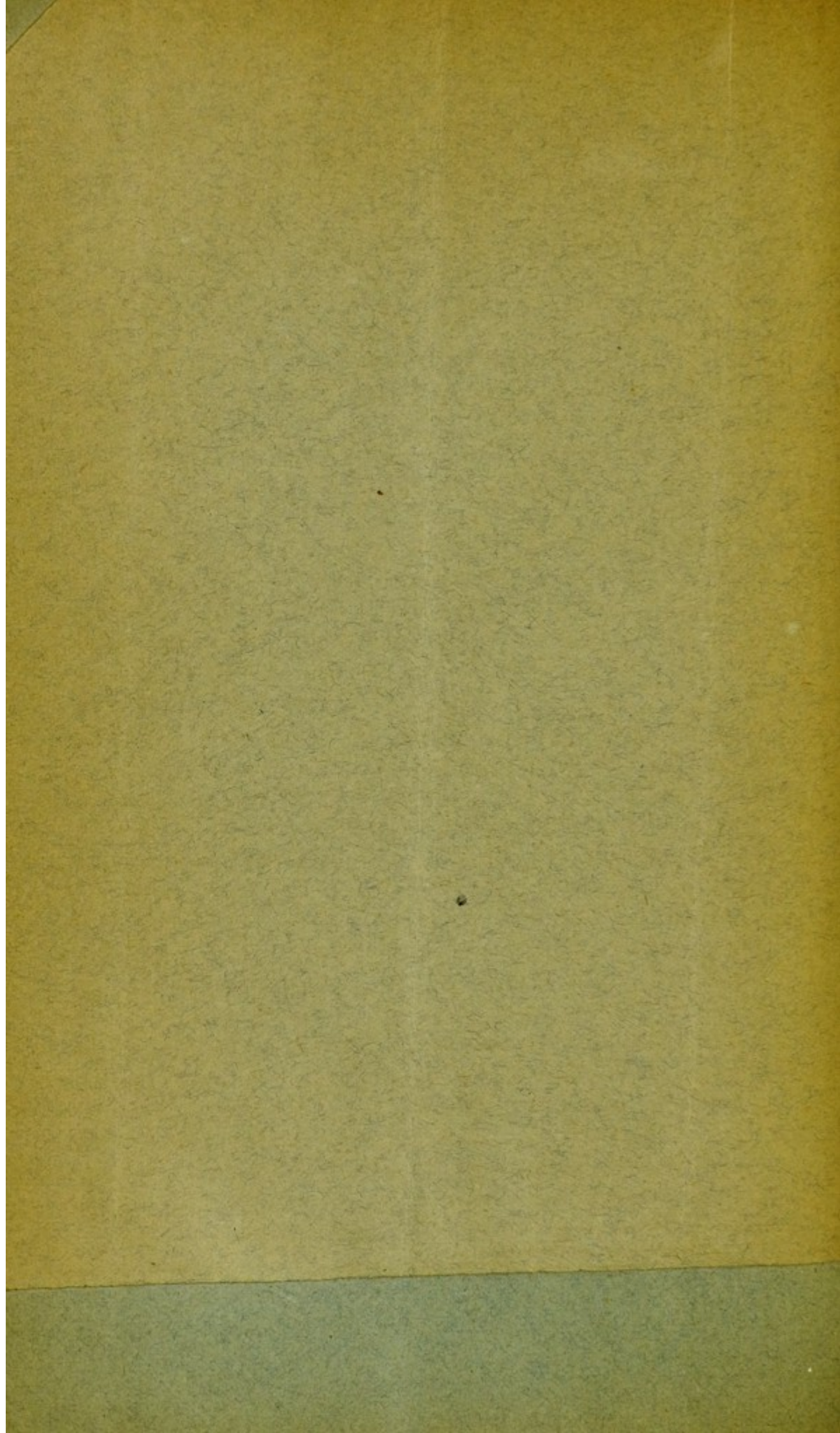
Rickety Deformities of the
Lower Extremities

by

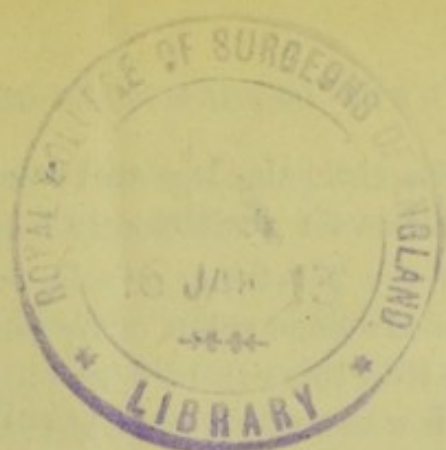
Edmund Owen



Practitioner 1884



Proctimus
1888



RICKETY DEFORMITIES OF THE LOWER EXTREMITY; THEIR TREATMENT BY OPERATION.

BY EDMUND OWEN, F.R.C.S.

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THAT slight rickety deformities of the lower extremity can be gradually but very slowly effaced without operation is a well-known fact, but if the deformity be at all severe then gentle measures generally fail. It is no unusual experience that when a surgeon has been endeavouring to straighten a valgus limb by gently straining it in a well-padded box-splint, he has had to abandon that treatment on account of the appearance of excoriation about the outer ankle or on the inner side of the knee. So also with the use of elastic bands. The child's skin is intolerant of continuous pressure, even when that pressure is slight.

Moreover, if in this way a valgus knee have eventually been straightened, this has probably been at the expense of the strength and integrity of the joint, so that the ligaments have been afterwards found so slack that the knee has been untrustworthy and the whole limb unstable, whilst the leg has readily returned to the old deflected position each time that the knee has been extended and the subject has tried to stand erect. Indeed, it has happened that when such a helpless patient has applied elsewhere for further assistance, the surgeon has had no alternative but to let the joint settle down again into its original faulty position, preparatory to his effecting a permanent straightening by subcutaneous osteotomy. It does not satisfy the knock-kneed lad that his limbs are straightened, he must have them serviceable as well. Better a strong valgus limb than one that is straightened but useless.

Again, with regard to curved tibiae, it is generally admitted

that in the case of a child the legs will come straight if only he can be kept off his feet for a sufficiently long time; if he can be kept in bed or on the hearthrug or sofa, or if the limb can be secured in a Thomas's knee-splint or by some other trustworthy means. But, as a rule, this can be done only in the case of well-to-do patients. How can the mother of the hospital out-patient detail a nurse to look specially after her knock-kneed or valgus child; and how can she find money to buy, or time to arrange for the proper wearing of a splint? When, therefore, deformity is considerable, nothing short of operation can suffice to remedy it.

About ten years since, when the operation of subcutaneous osteotomy was being widely advocated in the treatment of rickety deformities of the extremities, there appeared to be a considerable risk that, in the enthusiastic reception which it met with, sight might be lost of grand conservative principles; and this was felt in other countries than England. De Santi, for instance, called out against "blindly lavishing" the operation, whilst another French surgeon, at a somewhat later period, spoke boldly of what he called the *cacoëthes secandi*. Children of very tender years and therefore pliant limbs were being brought under chisel and mallet, whose slight deformities might surely have yielded to time and patience, and with no subjection to risk.

But osteotomy has probably now taken its proper and important place amongst surgical procedures, and those who at first were inclined to regard it askance are ready enough to adopt it in the case of a severely knock-kneed or bow-legged boy or girl, rather than be wearied by the long-continued, irksome, and disappointing treatment of a gentler nature.

But between the gentle method and osteotomy there is a line of procedure which is perhaps too often overlooked, namely, the forcible straightening of the limb under an anæsthetic. The method was first introduced from France, where it had been widely practised by Delore, under the name of *redressement forcé*. I have now employed this plan in a considerable number of cases, not with an "osteoclast," indeed, but by using the hands alone, or with the additional help of the knee, in the same way in which one would straighten a stiff bent stick, or a metal rod. Frequently I have tried the forcible method before proceeding

to perform osteotomy, sometimes with success, but at other times to discover that that there was no alternative to a cutting operation.

It is not to detract from the value of Delore's operation to say that it is unscientific, in that the operator does not know exactly in what manner he effects the improvement. Suffice it that he does effect the improvement and that without risk, at least so far as one can learn, either to limb, joint, or life. Perhaps it is that the straightening takes place by the yielding of the soft tissue of the end of the bones or of their articular surfaces, perhaps by a slight alteration in the plane of the junction-cartilage, or in the fibres of the outer lateral ligament, possibly of all three combined.

It is surely a matter of considerable import, as it is also for sincere congratulation, that though the operation has been successfully resorted to probably hundreds of times, still no opportunity has occurred for obtaining a knowledge, by post-mortem inspection of the parts, of the exact nature of the change by which the improvement is effected.

The younger the child, of course, the more easy is the procedure. But then one must not lose sight of the fact that the very young child may be effectually treated, and properly so, by the gentle means only. Still, in the case of little children, slight and repeated attempts at forcible straightening, even with the employment of such slight violence as not to need the administration of an anæsthetic, may give material help in carrying out the patient and gentle method by splint and bandage.

In those cases of knock-knee in which the bloodless measures either offer no prospect of success or have absolutely failed, osteotomy is the only alternative; and in performing this I have now entirely discarded the osteotome and mallet, preferring to make an incomplete section of the femur with a key-hole saw and then completing the fracture by force. Having "cleansed" the area of operation, I make a longitudinal three-quarter-inch incision on the outer side of the thigh a little above the condyle, clearing a passage for the narrow-bladed saw by a large raspator, with which also an endeavour is made to raise the periosteum. Along this instrument the saw is slipped, the femur being then sawn, so far as one can tell, about half or three-quarters of the

way through. Sometimes, when the bone is very hard, the first attempt which is then made of breaking the bone fails, and the saw has again to be introduced. If both limbs require operation, the second is treated before the first is permanently dressed; they are then fixed straight in a box-splint or in a Bavarian dressing. Of the objection to the presence of sawdust in the wound we know nothing in practice, though in theory it is often raised. The saw has a rather short and thin blade and a simple flat handle. The long stalk-bladed saw, which has been specially designed for subcutaneous osteotomy, is by no means suited for section of the lower end of the femur, or of the shaft of the tibia, in the case of a child.

For a leg which is bowed laterally, or possesses that antero-posterior and extreme curve which is so often found a little above the ankle of a rickety child, and which refuses to yield to forcible manipulation, osteotomy with the saw is likewise easily performed. A direct incision is made down to the inner surface of the tibia and the bone is sawn about half-way through and then broken. It may even then be prevented from coming perfectly straight by the tendon of Achilles, which may have been stretched like a bow-string in the concavity of a curve; instruments should therefore always be at hand for performing tenotomy. And when the bent fibula is a check to the straightening of the bowed but severed tibia, it is easily snapped through at about its middle by giving it a sudden sharp bend.

However great an antero-posterior or a lateral curvature of the leg-bones may be in childhood, it is, as a general rule, superfluous to remove a wedge-shaped piece of bone from the convexity of the bend. A simple direct incision into the bone, and fracture of the undivided tissue suffice, for after the creation of this complete compound fracture it is advisable, if not absolutely necessary, to keep the child off his feet for several months, lest the soft uniting cement also yield and the deformity become as bad as or worse than ever. During these months of perfect rest the slight deformity which remained when the limb was put up after the operation gradually fades away. The fibula breaks through so easily with a properly applied and sudden jerk that osteotomy of its shaft can rarely

be needed. But in breaking this or any other long bone, as in attempts to straighten a bowed leg or a knock-knee, the surgeon too must be careful not to put too great a strain upon the junction-cartilages.

The object of this short paper is to direct further attention to the value of *redressement forcé* as a means of treating such deformities of the lower extremities as are not likely to be found amenable to the gentler method, and to urge that when osteotomy has to be performed upon a tibia or femur which is too solid to yield to the bloodless treatment, a simple key-hole saw is to be preferred to the osteotome and mallet. Doubtless in the master-hand of an Ogston or a Macewen the osteotome is safe enough, but one has heard of various grave accidents in connexion with its employment in the hands of others—accidents which could hardly happen with a saw which is being worked from the front of the bone, and the movements of which even a prentice hand is able to appreciate and to guide.

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