ART. XXIII.—*On the Radical Cure of Varicocele by Subcutaneous Ligature of the Spermatic Veins.* By JOLLIFFE TUFNELL, Surgeon to the City of Dublin Hospital; Fellow and Examiner in Surgery, Royal College of Surgeons in Ireland; Ex-Regius Professor of Military Surgery, &c.

FEW surgeons can be long in practice without having numerous cases of varix of the spermatic cord come under their observation. Varicocele is indeed an affection from which all classes of society suffer, and some to a very great extent. It is a source of annoyance to all, and of almost disqualification for their respective businesses to many. It prevails at a period of life, too, viz., that between puberty and advanced manhood, when the individual, whatever be his calling, needs the full use and vigour of his bodily powers. In the Tropics it persecutes the European, unfitting him for any duty whatever; and at home, even in our temperate climate, is, as I have already stated, a source of annoyance to very many.

It is true that some persons go about with the veins of their spermatic cords greatly enlarged, tortuous, and distended, and bear the inconvenience without complaint; but to the majority it is a continued source of weariness and pain; in many instances totally depriving the patient of all enjoyment of life. The depressing influence, too, upon the mind of the individual which I have witnessed it to exercise, has been in some cases extreme. I know few affections (except syphilophobia), in which the attention of the patient is so concentrated upon his malady as in this. The weight in the scrotum, the perpetual aching up the cord, and through the groin to the back, the wearing pain along the thigh, and sympathetic action of the nervous system generally, all tend to render the sufferer miserable: his whole thoughts, indeed, are fixed upon his ailment, and his mind may almost be said to be centred in his scrotum. This may seem to many to be an overdrawn sketch; but it is what I have witnessed so often, that I am inclined to attach a very great importance to any measure which is calculated to obviate this malady, and permanently give relief *without risk*. The amount of inconvenience experienced is not altogether in keeping with the dimensions of the tumour in the scrotum; for in some cases a considerable dilatation of the veins will be hardly regarded by the patient, whilst in others a much less amount of distension will produce, in persons of nervous temperament and irritable system, continued suffering.

Upon the symptoms of this affection, and its exact pathological character, it would be superfluous to remark; but in refer-

rence to its consequences, I would observe that in my experience the diminution in virile power, which so frequently is complained of in this affection, is more depending upon mental disquietude than upon any alteration in the testis itself. The gland of the diseased side will most frequently be found soft and flabby, as compared with the state of health, but its secreting structure, still fully capable of exercising its functions.

With reference to the treatment of these cases, as they come before the practising surgeon, I am sure many will bear me out as to the anxiety which is expressed by patients so afflicted to have the affection radically cured; and of their dissatisfaction at being advised to continue under palliative measures. They will follow them for a while (if not previously tried); but will most frequently return, and press for the adoption of means calculated to give permanent relief, although warned of the risk they may incur.

It was in consequence of cases of this nature, in which, almost contrary to my own wishes, I was forced by the patients to operate, that I adopted the method which I am now about to advocate—a plan which, I feel assured, will render the hitherto hazardous procedure of obliterating the veins of the spermatic cord an act of almost perfect safety, accompanied by success. That the obliteration of these veins has always been a subject of anxiety to the surgeon must be evident, from the variety of modes of operating that have one after the other been employed. If we turn to the records of surgery, we find an almost endless variety, some of a perfectly barbarous kind. We have, in the first place, the compression of the veins “between iron forceps, whose jaws, being gradually tightened by means of thumb-screws, produced as the result a slow section of the soft parts together with the vessels;” next, the *gentler* treatment of “passing a ligature through, and tying up the skin of half the scrotum with all the vessels except the artery and vas deferens, so that the scrotum is divided by ulceration.” Then Reynaud’s modification of the above, “by introducing a curved needle, threaded with a ligature, behind the bundle of veins, bringing it out again about two-thirds of an inch from the place of entrance, enclosing the dilated vessels, which ulcerate, and are divided in the course of from fifteen to eighteen days, the ends of the ligature being firmly tied over a roll of linen or paper.” After that came Gagnébe’s improvement upon the above, viz. by “bringing the ligature out at the same place where it was introduced, strangulating the veins by the loop formed under the skin.” Then the cutting away of the loose, relaxed skin of the scrotum, as advocated

by Sir Astley Cooper. Next Vidal's operation "of compressing the veins of the cord between two silver-wires, passed, one in front and the other behind the vessels, rolling the veins up gradually, and continuing this procedure until the wires freed themselves by ulceration." Again, Velpeau's plan "of introducing two pins, one before and the other behind the veins, which are then compressed by carrying a ligature around the extremities of the pins, the varicocele being included between them." After this, Velpeau's simpler plan of passing a pin behind the veins, and working a twisted figure-of-8 suture over them; the twisted sutures of Sir Benjamin Brodie, modified by the subcutaneous incision of the veins between them, as practised by Dr. Lee; the passing of threads through the veins as setons, and their obliteration by the introduction of a heated awl or wire, as suggested by Mr. Fergusson; and the double ligature of Mons. Ricord. All of these have severally been employed; and the very variety must be sufficient to prove how unsatisfactory in the majority of cases had the previous modes of treatment proved, and how each surgeon, in consequence, had endeavoured to obviate pre-existing objections.

It was with this view that I adopted the annexed modification, the success of which will, I trust, justify its general use. The plan I advocate is simply an improvement upon Mons. Ricord's double ligature, by adding to the double loops for the enclosure of the veins a pair of *retracting guides*, by which the surgeon is enabled to withdraw the compressing medium at any moment, thus holding as it were a check-string upon inflammation in his hand, producing an adhesive phlebitis, and stopping short of the suppurative form.

With this latter view, I employ also fine iron-wire as a substitute for the ligature of silk; metal being less irritating to the parts engaged.

Before resorting to the plan which I am now about to advance, I had found that in each instance in which I had used Ricord's loops, suppuration in the scrotum occurred. Since employing the retracting guides, no such annoyance has taken place.

The method, then, that I advocate is the following:—In any given case of varicocele that comes before me, I interrogate the individual, and ascertain whether any remedial means have as yet been adopted; and, if not, I recommend palliative treatment, viz. attention to the bowels, so as to prevent, by regularity of action, any lodgment in the descending colon;

the use of cold water sponging night and morning, to constrict the vessels and dartos of the scrotum; and a bag truss. I do not advocate the use of pressure to the dilated veins at the external abdominal ring by means of the spring truss; or the puckering in of the loose skin of the scrotum, and the confining it in a steel ring, as sometimes adopted—my experience being to the effect, that these remedies only irritate the patient, and that they are both inferior in action to a well-fitting common bag truss. If these simple measures fail to afford such an amount of relief as will satisfy the patient, and that he persists in having more effectual means adopted, then I employ the following proceeding, after satisfying myself of the non-existence of organic disease of the kidney:—

I prescribe an aperient, to evacuate the contents of the intestines, of the compound powder of jalap combined with calomel. I confine the individual to bed for a day, and then deligate the veins in the manner recommended by Ricord, and illustrated in the accompanying sketch, taken from Bernard and Huette's work, modified as will be described.

An assistant separates and holds aside the vas deferens. The bundle of veins is then isolated, and taken up in a fold of the skin, the first loop of wire being carried behind the veins (Fig. 1, *d*). A second loop of wire is then passed in the opposite direction, in front of the veins, through the same orifices as the first (Fig. 1, *c*). The bundle of veins (Fig. 2 *a*) is thus included between the two loops, the free extremity of each wire being passed through the loop of the other, as seen in Fig. 2, *c, d*. The wires are then drawn in opposite directions, until about as much of each loop remains projecting from the scrotum as is seen in Fig. 1—and the amount of the projection of the loop made equal on either side. Two portions of iron-wire are now

taken, each four inches in length, and doubled in the middle as closely as possible. One of these is passed through either loop, and drawn to its centre. The ends are then twisted. These wires form the *retracting guides*, and give the surgeon the most complete control over the vessels of the cord, enabling him at any moment that he wishes to take the ligature from off the veins, and remove all source of irritation from within the scrotum. The main wires (Fig. 3, *d, c*) are now to be drawn upon equally and *forcibly* until the vessels of the cord are completely strangled. This done, the ends of the wires are brought up and attached to a ratchet, and thereby kept tensely strained; or else twisted around the extremities of a piece of strong watch-spring, bent back into an arc, the effort of which, to restore itself, keeps up continuous tension upon the cord.

With reference to the length of time during which it may be necessary to maintain this constriction, in order to produce sufficient adhesive phlebitis, and yet avoid the suppurative form, this must entirely depend upon the constitution of the individual. The guides for the surgeon will be the density of the swelling of the veins below the ligature, between the epididymis and the wires; the feeling of firmness to the touch; and a slight blush upon the integuments of the scrotum. These symptoms, conjoined, will denote that such a degree of inflammation has been excited as will produce obliteration of the venous trunks. The main wires are now to be cut across, and the ratchet or steel spring detached. This done, the figure-of-8 loop encircling the veins is to be opened, by withdrawing the wires through the medium of the retracting guides. All source of irritation being now removed, further inflammation is prevented. No pus is formed in the veins, which can be carried up into the circulation; or external to the veins, in the scrotum, which can give rise to the formation of abscesses in its cellular tissue. A little lead-wash to the scrotum, and rest upon the back in bed for a few days, with low diet and attention to the bowels, completes the cure. The patient, before rising, should be fitted with a suspensory bandage to support the parts. He may then resume his ordinary business or occupation. The following case—that of a medical man who was under my care during the past summer, and treated in the manner described—will well illustrate the mode of proceeding. I give the letter and detail of the case of this gentleman, as forwarded to me by himself after returning to the country, cured:—

“ July 31, 1861.

“ MY DEAR SIR,—I send you, enclosed, a short account of my case. I arrived at home without suffering the slightest inconvenience from the journey. I have now, I am happy to say, lost all the unpleasant sensations of dragging, &c., &c., to which I had been so long a martyr. The consolidated mass in the vein is quite free from any pain or tenderness.

“ Believe me to remain yours, very faithfully and obliged,

“ *To J. Tufnell, Esq.*”

CASE.—“ My attention was first attracted to the enlarged state of the left spermatic veins during the winter of 1854, though they never caused me much annoyance till August, 1858, when I arrived in India, where the hot climate had such a relaxing effect on the integuments of the scrotum, that I found I could not manage to get about with any degree of comfort, without a bag truss, which I then commenced wearing. I remained in India till February, 1861, when I left for England, with a view to having an operation performed. During my stay in India the vein had continued to get larger—being, when fully distended, equal in diameter to that of my little finger—and the testicle had wasted, so as to be not more than half its original size.

“ July 13th, 1861. The operation having been determined upon, on the 14th I had three grains of calomel at bed-time; followed by a dose of compound jalap in the morning.

“ 15th. Bowels well acted on.

“ 16th. Operation performed about 11 o'clock A. M., this morning. During the drawing together of the wires, and for a couple of hours afterwards, I felt great pain shooting up along the cord, and into the left lumbar region. Had forty drops of Battley's sedative after the operation, in two doses, which procured me some sleep, and almost complete relief from pain. Had barley-water to drink through the day, and some tea and toast in the evening.

“ 17th. Had a very good night's rest; no pain or tenderness about the cord above the ligature. Venous plexus below the ligature slightly swollen, but free from pain; no fever or constitutional disturbance. The wires were tightened four turns of the ratchet this morning, and three in the afternoon.

“ 18th. Passed a good night; urinary secretion full, and

easily passed; no uneasiness in cord or lumbar region; veins below the ligature soft and elastic; wires tightened five turns of the ratchet; the wires were tightened again in the evening, when one of them gave way; it was, however, easily repaired.

"19th. No pain or constitutional disturbance; good night's sleep; there is a slight yellow-brownish discharge oozing from the orifices of the wires; and the left side of the scrotum presents a slight blushing fulness; the ligatures were now withdrawn, without the slightest pain.

"20th. Scrotum more corrugated; no discharge from the orifices, and no pain.

"21st. The venous plexus between the ligature and the epididymis forms an oval hardish mass, somewhat larger than an almond; no pain or discharge; the general functions uninterfered with; had a seidlitz powder this morning; low diet to be continued.

"22nd. Inflammatory deposit much reduced in size, [and more globular in shape; free from pain of any kind; integuments of scrotum corrugated; ordered cold lead lotion to the scrotum.

"23rd. Lotion has had great effect in tightening up the skin of the scrotum; no pain; dense consolidation of venous plexus.

"24th. Inflammatory mass reduced in size; to have fish for dinner.

"25th. Same report; allowed up for a short time to-day.

"26th. Feeling no inconvenience from standing.

"27th. Allowed to leave town to-day; there being no pain or uneasiness about the cord or testicle, and entirely free from the dragging sensation that used to be so annoying."

The mode of treatment here advocated I believe to be perfectly free from risk, and certainly most effectual. I should be glad to receive from any members of the profession who may be inclined to adopt it, the results of their practical experience, and its success, or the reverse, in their hands.