

## **Observations on trusses / by Thomas Pridgin Teale.**

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56 with the Author's kind regards  
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ON  
T R U S S E S.

BY  
THOMAS PRIDGIN TEALE, F.L.S. F.R.C.S.  
SURGEON TO THE LEEDS GENERAL INFIRMARY.

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From the London Medical Gazette.

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1850.

OBSERVATIONS

ON

T R U S T S .

BY

THOMAS DIBBIN TAIN, F.R.S. &c.

IN TWO VOLUMES.

Printed by the London Medical Society.

Printed by W. Wood and Co. Ltd.



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AMIDST the various devices, patented and non-patented, which have from time to time been contrived for the relief of reducible hernia, the surgeon, who is only occasionally called upon to minister to hernial patients, feels bewildered by the number and diversity of the objects presented to his choice, and is unable to determine their relative merits. Even the hospital surgeon may occasionally be found whose mind is not fully settled on this subject.

Without presuming to expect that any observations of mine can remove the difficulty, but in the hope that they may in some degree lessen it, I venture to submit to the profession a description of the trusses which both in hospital and in private practice I have found to be the most valuable.

It has been for some time my endeavour to select, from the hernial bandages hitherto employed, such portions of them as appeared the most beneficial, and to combine these elements so as to constitute a truss capable of affording support to the viscera, and comfort and security to the wearer.

The trusses which it is my present object to describe, consist of the ordinary *elastic steel girdle*, a *hard pad* specially adapted in size and form to the part requiring support in the different species of hernia, and a *spiral spring* acting perpendicularly upon the pad.

Elastic girdles of steel, recommended in 1665 by Matthias Mayor, were afterwards extensively used by Blegny, and are now in general use. A spiral spring acting directly upon the pad was occasionally employed by Blegny, and has since been adopted in the construction of "Coles's patent truss." Pads of hard material, as wood and iron, were employed as early as the thirteenth century, and after long disuse have recently been brought into operation by Drs. Hood and Chase, in America. The material employed by these surgeons was boxwood. In reporting upon Dr. Chase's truss, the Philadelphian Committee state that it is "worn with so much comfort that patients generally relinquish it unwillingly, and sometimes absolutely refuse so to do, even when

pronounced cured by the surgeon." For many years I have invariably used trusses, with ivory pads, in the treatment of inguinal hernia in infants, and of late have used *hard* pads of ivory or wood, with scarcely any exception, in the treatment of reducible hernia both of infants and adults. By the use of the hard pad the most perfect and definite support is given to the weak part of the abdominal wall; but in its use care must be taken that the form and size of the pad, and the amount of pressure exercised by it, are judiciously adapted to the particular case.

The trusses to be described in this paper have been constructed for me by Mr. Thomas Eagland, of Bond Street, Leeds. It affords me much pleasure to have this opportunity of paying my tribute of respect to him for the artistic skill and the science which he has most successfully brought to bear in their construction.

*The oblique inguinal truss.*—The oblique inguinal truss consists of an elastic girdle of steel, to which is adapted a hard pad of oblongo-oval form, acted upon by a spiral spring.

By means of the elastic steel girdle the truss maintains a firm and steady seat upon the pelvis; by the hard pad of oblongo-oval form a firm support is given to the internal ring and inguinal canal, the external ring being left free; and, by the spiral spring, the pressure of the pad is directed perpendicularly upon the part requiring support, during the varied movements of the body. Through the medium of the spiral also, the *degree* of pressure exercised by the pad admits of being modified by tightening or slackening the end of the girdle-strap, which is fixed to the button on the pad.

The *girdle* is formed of a strip of elastic steel, rather more than half an inch in breadth, and of sufficient length to extend from the pad across the back of the pelvis as far as the haunch of the opposite side, from which point the girdle is prolonged by a leathern belt across the lower and front part of the abdomen to be fixed to a button on the pad.



FIG. 1.

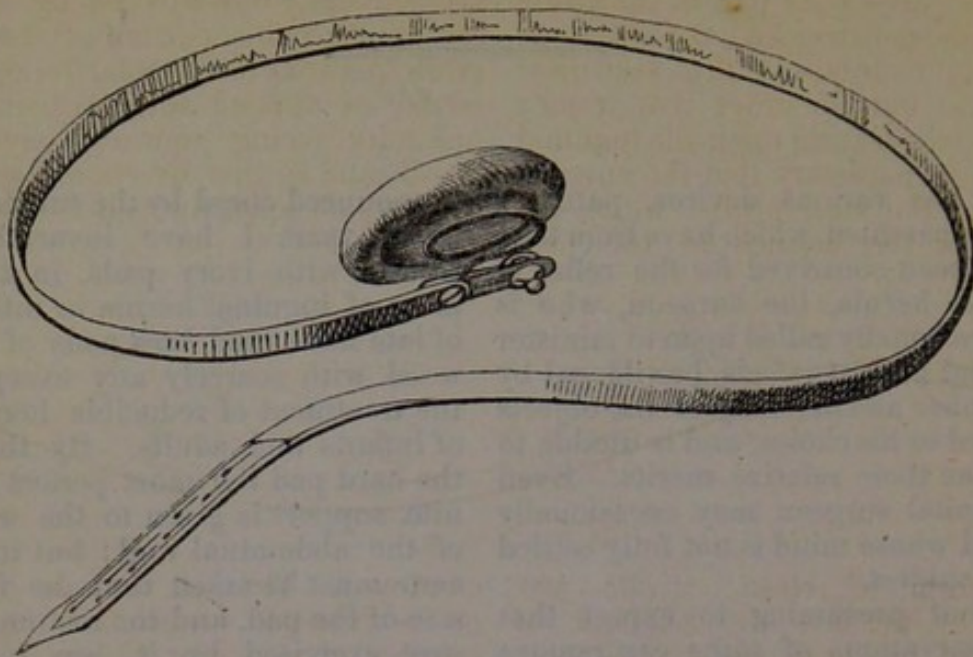
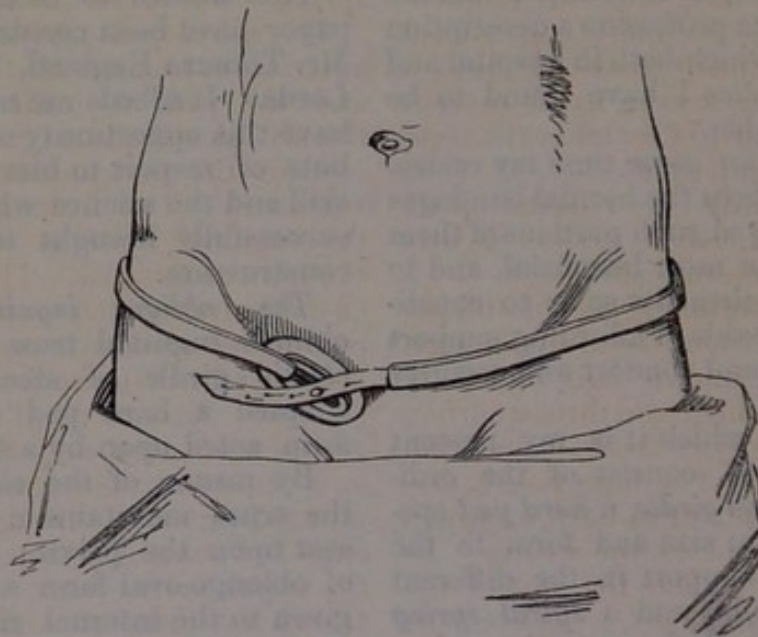


FIG. 2.



Although elastic girdles of steel are now in general use, it is rare to find one, in the various offices of surgical mechanics, that is not faulty in construction; or, in other words, that secures to the wearer the full amount of benefit that it is capable of affording. The chief error consists in the portion of the girdle which is applied to the back part of the pelvis being made of a *straight* strip of metal bent towards the circular form, and representing a short *cylinder*. The only bearing which such a girdle exerts upon the back of the pelvis is by its lower border; whereas, if the girdle were constructed so as to represent a transverse section of a cone, it would adapt itself to the obliquity of the back of the pelvis, and

would thereby secure a bearing upon this part by the whole of its internal flat surface. This advantage is secured, as I have elsewhere\* shown at considerable length, by the form given to the steel plate of which the girdle is formed. Instead of being a *straight* strip of metal, the portion which is applied to the back of the pelvis should be cut in the form of a curve, the convexity of which is directed downwards (see fig. 3, *a* to *b*). When such a piece of steel is bent towards the circular form it represents a section of a cone, the upper border of which is shorter than the lower, and the flat surface has an obliquity corre-

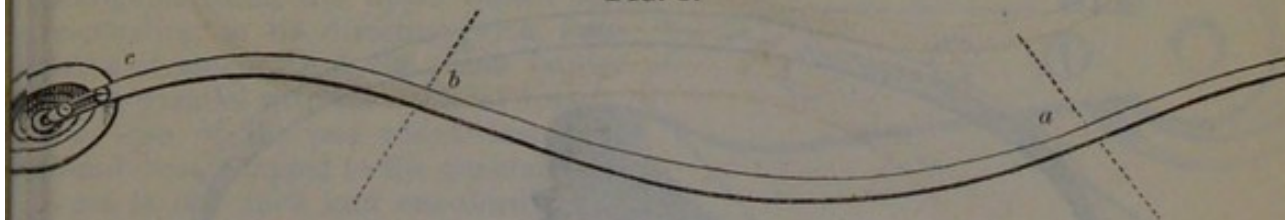
\* Practical Treatise on Abdominal Hernia, by Thomas Pridgin Teale.



sponding to the obliquity of the back of the pelvis. The back part of the girdle being thus constructed, the truss is enabled to maintain a firm seat upon the pelvis; but, in order that it may exert a direct bearing upon the inguinal canal, it is necessary that the anterior portion of the steel girdle, which extends from the haunch to the pad,

should describe a moderate curve with the convexity upwards (see fig. 3, *b* to *c*). By bending this portion of the elastic girdle towards the circular form, its internal or applied surface acquires an obliquity facing upwards and backwards, and in this direction it exercises its pressure upon the pad.

FIG. 3.



This form of elastic girdle was adopted by the late Mr. Eagland, of Leeds, and has been used by his sons, Mr. Thomas Eagland, of Leeds, and Mr. Edwin H. Eagland, of London. I have seen trusses similarly constructed by other instrument makers; but in too many instances, even in the present day, a straight strip of metal is the form of steel girdle employed.

The steel girdle is covered with leather, silk, or calico, and is slightly wadded on its internal surface.

The *pad*, for ordinary cases of oblique inguinal hernia, should be of an oblong-oval form, two and a half inches in length, and one inch and three-quarters in breadth. Ivory is the best material, being susceptible of a high polish, and also a good conductor of heat, on which account it is cool to the wearer. In hospital practice, where the cost of the instrument is an object, a pad of box-wood steeped in linseed-oil may be substituted for it, or a boss of thin metal covered with a layer of leather. In young subjects, whose muscles are powerful, the pad should be of smaller size and greater prominence, for in them a more concentrated pressure is required. In old persons, whose muscles and aponeuroses are feeble, the pad should be larger and flatter. If the hernia has considerably dilated the inguinal canal, a pad of greater breadth and less convexity is to be used. When the posterior wall of the inguinal canal has been so much encroached upon, in consequence of the large size and long continuance of the protrusion, that the hernia is apparently direct, the form of pad hereafter to be described as applicable to direct inguinal hernia should be

employed. The pad must be hollowed on its external surface, for the double purpose of giving it lightness and of allowing a recess for lodging the spiral spring when pressed home.

The *spiral-spring*, placed between the anterior extremity of the steel girdle and the pad, is made of steel wire thickly electro-plated; or, where the cost of the instrument is an object, varnished. The form of the spiral in the inguinal truss is oval, adapted to the form of the pad. The terminal coil of the spiral, which is attached to the pad, is received into a narrow groove prepared for it in the concave surface of the pad. This mode of attachment between the spiral and the pad renders any other fastening unnecessary. An uniform pressure throughout the whole extent of the pad is thus obtained; and the spiral, acting as a universal joint, allows the girdle to adapt itself to the varying movements of the body without disturbing the pad.

The measure for this truss is taken by passing a string from the internal ring around the pelvis to the same point, care being taken that the course of the string is directed on each side along the depression between the trochanter and the crest of the ilium. The mechanist, in constructing the truss, allows one inch of additional length to compensate for the space occupied by the wadding. When a double truss is required, in addition to measuring the circuit of the pelvis it is necessary to note the distance from the internal ring on one side to that on the opposite.

*The direct inguinal truss.*—For the support of a direct inguinal hernia, or of an oblique inguinal hernia, which from

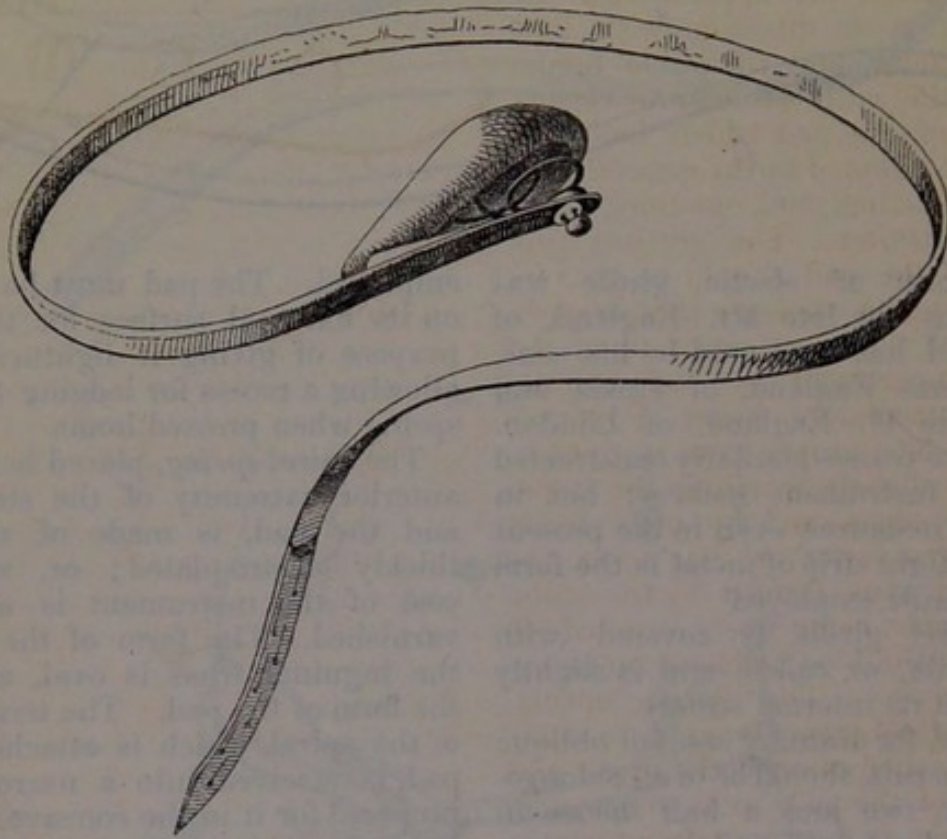


long continuance has simulated the direct, it is necessary that the pressure of the truss should be chiefly exercised over the external ring. For this purpose a truss may be employed similar to the former, but with an egg-shaped pad, the larger extremity of which lies towards the pubes. In ordinary cases

the pad may be two inches and a half in length, and one inch and a half in breadth towards its pubic end. The degree of prominence of the pad should be adapted to the particular case.

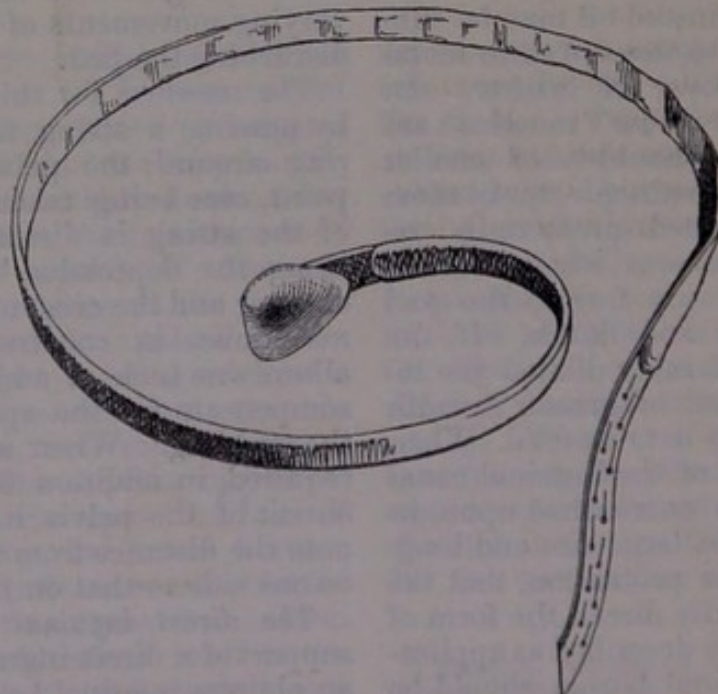
The spiral in this truss is circular, and is attached so as to act chiefly upon the pubic end of the pad.

FIG. 4.



*The femoral truss.*—The femoral pad of special form, acted upon by a spiral spring. The truss, like the former trusses, consists of an elastic girdle of steel, and a hard

FIG. 5.





The elastic steel girdle is similar to that described for the oblique inguinal truss, except that its anterior portion, which extends from the haunch to the pad, should sweep in a course somewhat more descending. This portion of the steel girdle is usually about one inch shorter than in the inguinal trusses.

The pad of ivory, boxwood, or thin metal covered with leather, is of a triangular form, the upper border corresponding in its direction with Poupart's ligament, and the pubic border being parallel with the femoral vessels. The size of the pad which has been found best adapted to the generality of cases is one inch and one-third in the vertical direction. The greatest prominence of the pad should be near its upper and pubic angle, so that its pressure may be chiefly exercised upon the pubic compartment of the femoral sheath, immediately below Poupart's ligament. The proper form is given to the pad by slightly bevelling the upper and pubic edges, and by more freely bevelling the lower or iliac edge, the angles and apex formed by the union of these planes being freely rounded off. The pad should be hollowed on its external surface. The spiral spring, which in this truss is of a circular form, is attached towards the upper and pubic end of the pad, so as to act more especially on its most prominent part.

A pad thus constructed gently closes the external aperture, namely, the saphenous opening, but its chief pressure is directed to the pubic side of the femoral vein. The large vessels are thus subjected to as moderate a degree of pressure as is consistent with the support of the hernia, and the pressure is concentrated upon the part which more especially requires support. It is of the utmost importance that the pad of the femoral truss should be of *small* size. If its dimensions materially ex-

ceed those stated above, the pad is constantly liable to displacement from the action of the psoas and iliacus muscles on one side, and the pectineus on the other.

FIG. 6.

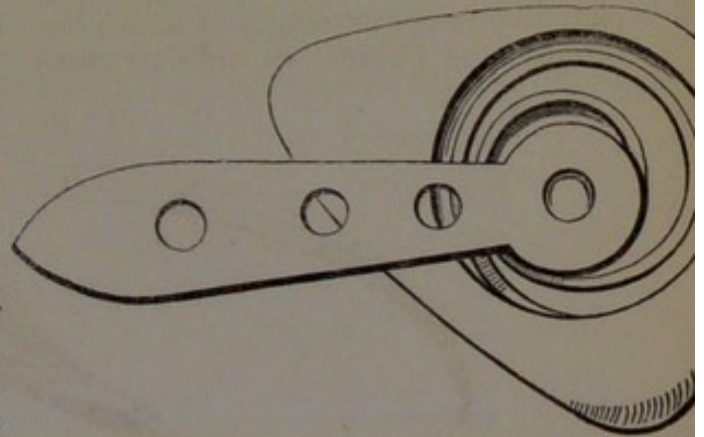
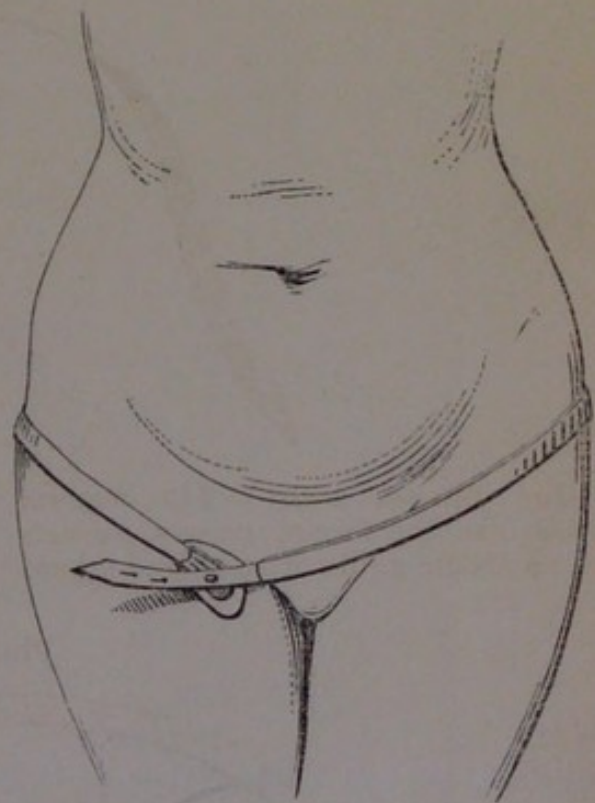


FIG. 7.



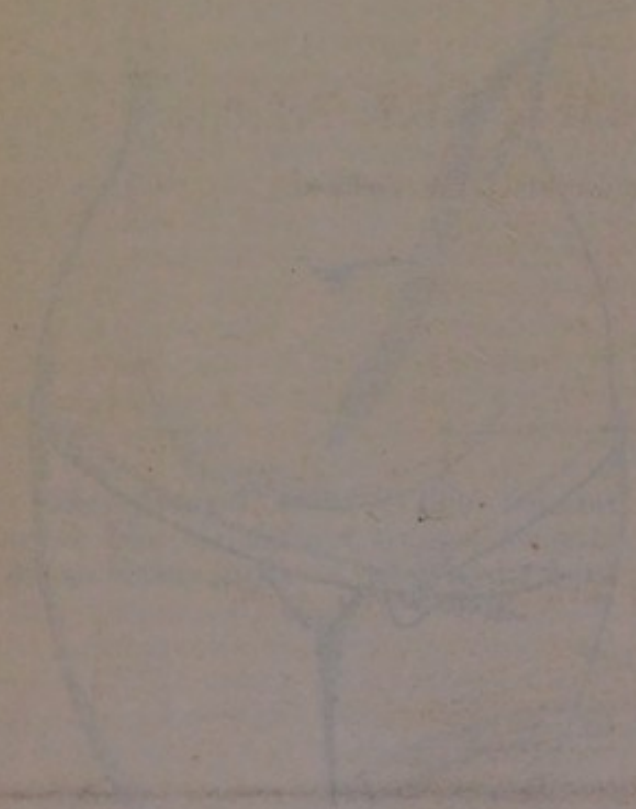
The hard pad and spiral spring are equally applicable to the umbilical and other trusses.



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Fig. 7.



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