DETACHABLE BRACE FOR CULDOSCOPY OPERATIONS

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Abstract

A readily usable pair of braces for quick affixation, each on an opposite side of an elongated operating table, after a patient has assumed the knee-chest, hypoextension position. The braces each have a longitudinally extending, lower arm, supported generally horizontally in one of the table clamps, each have an integral, upwardly extending support arm, inclining inwardly toward the other laterally of the table and each have an inwardly facing, concaved thigh engaging padded plate with belt fastened around one of the thighs of the patient so that the knees of the patient are anchored against movement while the surgeon performs the operation.

The angle of affixation is quickly changeable if the surgeon finds the patient too obese, by merely loosening the table clamps.

6 Claims, 6 Drawing Figures
DETACHABLE BRACE FOR CULDOSCOPY OPERATIONS

BACKGROUND OF THE INVENTION

There are a number of medical operations which require a patient to assume particular physical positions in order to make the organs being treated suitably accessible to the doctor. Often the position is a relatively awkward one, and simultaneous patient stability and suitable access are not easily obtainable. Culdoscopy is one such operation which provides a particularly difficult problem. In culdoscopy, the lower abdomen must be unrestrained while the patient is held in a face-down position whereby the knees are brought nearer to the chest (the so-called knee-to-chest position). In this position, the shoulders of the patient must be lower than his hips so his internal abdominal organs fall toward his chest, leaving more room for the culdoscope. The patient’s back should not be arched upward. All these criteria of the position suitable for culdoscopy must be met without inhibiting the medical team performing the operation. Moreover, it is preferred that the apparatus be adjustable with respect to the angle at which the patient is held. Patients of varying degrees of obesity require different angles. Also, present positioning techniques result in the rear position of the body being pulled more to one side than the other, rather than being held in a desired central position.

DESCRIPTION OF THE PRIOR ART

A number of braces have been designed for holding patients in various positions, but none is entirely suitable for use in culdoscopy. For example, Linn, in U.S. Pat. No. 542,390, discloses a device to hold the calf of a patient in the Lithotomy position and is not adjustable to achieve the culdoscopy position. Schwarting, in U.S. Pat. No. 1,516,795, discloses a limb support which also is not adaptable to hold a patient in the knee-to-chest position. Andersen, in U.S. Pat. No. 2,557,177 discloses apparatus which maintains the back in a somewhat arched position. Moreover, the Andersen device comprises support means which would restrain the lower abdomen in the wrong position and other features which would interfere with access to the patient by the physician.

SUMMARY OF THE INVENTION

Therefore, it is an object of the present invention to provide simple, rugged, quickly set up apparatus useful in bracing patients for culdoscopy procedures, but also versatile enough for use in other surgical procedures.

Another object of the invention is to provide culdoscopy bracing apparatus that is relatively simple in construction so that it may be assembled readily by people of mediocre mechanical skill, and so that it may be easy to clean and disinfect.

A further object of the invention is to provide culdoscopy apparatus that can be used in conjunction with existing operating tables, giving adequate operative exposure while maintaining suitable access for the operating team.

Another object of the invention is to provide apparatus that is suitable for holding an anesthetized patient without traumatic effect to his skin, muscles, and peripheral nerves while maintaining the patient in a suitable culdoscopy position without restriction of his respiratory or circulatory systems.

Other objects of the invention will be obvious to those skilled in the art on reading the instant specification.

The above objects have been substantially accomplished by provision of a pair of culdoscopy braces, in combination with an operating table, and consisting of a pair of angularly adjustable brace assemblies removably attachable to an operating table by a quick-connecting lock means, each said brace assembly consisting of a thigh-engaging support brace which is positioned on a longitudinally extending, lower support arm supported horizontally in the table clamps, the lower arm having an integral, upper support arm angularly bent upwardly and inwardly therefrom to extend laterally of the table and in parallelism with the thighs of the patient.

A novel feature of the invention is the provision of a particularly advantageous and safe brace having an integral terminal end on the longitudinally extending, lower support arm which fits the rotatable clamp of the operating table and includes a revolvable, offset, cylindrical section which falls by gravity into locking position beyond the clamp of the operating table. The locking cylinder is chamfered to facilitate its sliding into the oval hole of the clamp-type vise of the operating table.

The culdoscopy brace is thus held in position by the grasp of the vise as well as being positively prevented from withdrawal from the vise, until the offset cylinder lock is manually rotated flush with the brace.

IN THE DRAWINGS

Fig. 1 is a side elevational view of the apparatus of the invention in use in combination with an operating room table.

Fig. 2 is an end elevational view of the apparatus shown in Fig. 1.

Fig. 3 is a plan view of the apparatus shown in Fig. 1.

Fig. 4 is an enlarged side elevation of one of the braces.

Fig. 5 is a plan view of the brace shown in Fig. 4, and

Fig. 6 is a view similar to Fig. 4 of another embodiment of the invention.

Referring to Fig. 1, it is seen that each brace 10 and 11 of the brace apparatus 12 consists of a thigh-engaging pad 13 and backer plate 14 integrally mounted on an angular support assembly 15. Each support assembly 15 includes a shorter support arm 16 extending laterally of the table, upwardly and inwardly to run almost parallel with the patient’s thigh bone and a longer longitudinally extending support arm 17 which is locked and pivotally mounted in one of the conventional clamp-type vise 18 or 19 in operating table 20, to extend substantially horizontally.

The patient is clamped into the thigh-engaging braces 10 and 11 with his knees resting on the rearward pad 22 of the operating table 20. The front parts of his body, i.e., the head and shoulders, are supported by conventional means, i.e., pads, rolls, braces or equivalent means on the forward pad 23 of table 20.

Figs. 4 and 5 show details of a thigh brace 10 or 11. The backer plate 14 is aconcave, stainless steel form and is covered by the shaped rubber foam pad 13 and then with a cover 26 formed of an electrically conductive rubber composition 27. Strap holder 31 is mounted by fastening means 32 to stainless steel plate 14. A strap 33 is then attached to the strap holder 31 by means of a loop 34 therein. The foam rubber provides a protection for the patient’s body, while the conductive rubber is used to assure no static electricity buildup which could result in sparks.

A brass washer 35 is mounted under flange 36 of strap holder 31. Washer 35 serves as a means to lift strap receiving loop 34 away from the plate 14 of brace apparatus 12 to allow easy attachment of the strap 33 thereto, but also to allow the strap receiving loop 34 to be positioned at a small angle to flange 36, thereby allowing it to be conveniently sized without projecting such a distance from the surface of a brace 10 or 11 that it becomes an inconvenience or hazard in the operating room.

Fig. 4 shows more detail of the longitudinally extending lower support arm 17, extending generally horizontally for insertion in the vise clamp and the terminal end 38 thereof which includes a rotatably mounted, cylindrical safety locking means 39 offset from the main body of support arm 17. A pin 41 is threaded in an off-center hole 42 in the end 38 of support arm 17 with cylinder 39 manually, and gravitationally, rotatable on the pin, so that it will fall into locked position when the end 38 is passed through the jaws of the vise 18 or 19. The tip portion 43 is beveled to facilitate the placement of the shaft in the operating table vise. A flange 44 limits travel of support
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arm 17 so it will not descend too far into the vise and so that the two clamping assemblies 19 and 18 on either side of the operating table will be in proper register, one with the other.

FIG. 4 shows the positioning of strap 33 in swiveled strap holder 31, the cover snap fasteners 46 and the strap buckle 45, which is fixed to plate 14 through a hole in cover 26. As shown in FIGS. 1 and 4, a slot 50 is shown on arm 16 to receive the end of belt 33.

As shown in FIG. 6, another embodiment of the invention, comprises a pair of braces such as 47, having quick release thigh attachment means 48, similar to the corresponding portions of a brace 10 or 11, but having a built-in adjustable clamp 49 on each angular rod 51. The clamp 49 includes split jaws 52 forming a socket 53 receiving the terminal end 54 of the longitudinally extending, generally horizontal support arm 51, corresponding to arm 17 for rotation on the axis of the rod and clamping of the upstanding, laterally extending, portion, corresponding to arm 16 at any desired angle. The clamp 49 includes an integral pintle, or depending pin 55, which enters the table vise 18 or 19 vertically for clamping at any desired angle therearound. Thus universal adjustment to any desired thigh angle is possible.

It will thus be seen that the objects set forth above, among those made apparent from the preceding description, are efficiently attained and, since certain changes may be made in the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. In combination with an elongated operating table of the type having a pair of rotatable vise-type clamps each at an opposite side of one end thereof, substantially at the level of the patient-supporting padded surface of said table:
   - a pair of culdoscopy braces, each including a one-piece, angularly bent rod, having a lower support arm, extending longitudinally of said table and supported generally horizontally in the adjacent said clamp and having an integral, upper, support arm extending laterally of said table, upwardly and inwardly and generally in parallelism with the adjacent thigh of a patient in the knee-chest, hypoextension position;
   - and a pair of concaved, padded, thigh attachment plates, with fastening straps, each fixed at the upper end of one of said upper support arms and facing inwardly toward the other for firmly securing the thighs of a patient during a culdoscopy, or similar operation.

2. A combination as specified in claim 1 wherein:
   - said lower support arm of said rod includes an eccentrically rotatable cylinder proximate the tip thereof, normally flush with said rod but arranged to fall by gravity into offset lock position when the rod is so horizontally supported in a vise.

3. A combination as specified in claim 1 wherein:
   - each said lower support arm of the angularly bent rod of each said brace is shaped to extend in parallelism with the table surface proximate the level thereof and includes a built-in clamp having a vertical pintle supported vertically in the adjacent table clamps.

4. A brace apparatus suitable for positioning the rear portion of a body in the knee-chest, hypoextension position on an elongated operating table for a culdoscopy procedure, said apparatus comprising a pair of one-piece rods each having a longitudinally extending, generally horizontal support arm, terminating in a quick-connecting lock means, adapted to be clamped in one of the opposite vise clamps of said table, each having an integral upstanding support arm angularly bent laterally from one of said horizontal arms and extending upwardly and inwardly toward the other and a pair of thigh-engaging, concaved, padded plates each fixed at the upper terminal end of one of said upstanding support arms and facing the other whereby the thighs of said body are firmly supported against forward, rearward or sideward movement when fastened in said padded plates.

5. A brace apparatus as disclosed in claim 5 wherein said quick-connecting lock means includes an offset cylinder rotatably mounted at the end of laterally extending support member and adapted for rotating into offset position to lock said apparatus into an operating table brace-receiving means.

6. A brace apparatus as defined in claim 5 wherein said longitudinally extending lower support arm includes built-in split clamp means thereon, said clamp having a vertically extending pintle for insertion in the rotatable split clamp of an operating table.

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