

*AN APPARATUS FOR MOUNTING AN
ANATOMICAL POSITIONER ON A PATIENT
CARE PLATFORM*

CROSS- REFERENCE TO RELATED APPLICATIONS

[0001] The present PCT patent application claims priority benefit of the U.S. provisional application for patent serial number 61098757 filed on 20-SEP-2008 under 35 U.S.C. 119(e). The present PCT patent application also claims priority benefit of the U.S. Utility patent application 12464456 filed on 12-MAY-2009. The contents of this related Utility application are incorporated herein by reference. The contents of these related patent applications are incorporated herein by reference for all purposes.

FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

[0002] Not applicable.

REFERENCE TO SEQUENCE LISTING, A TABLE, OR A COMPUTER LISTING APPENDIX

[0003] Not applicable.

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FIELD OF THE INVENTION

[0005] The present invention relates generally to medical equipment. More particularly, the invention relates to a table mount for use with a shoulder press that positions patient's shoulders during medical procedures.

BACKGROUND OF THE INVENTION

[0006] Best practices demand correct visualization of the vertebrae intraoperatively for all surgical approaches involving the cervical spine. The Citow Cervical Visualizer (CCV) has proven to be a safe and effective means by which a spine surgeon can correctly ascertain that surgery is being performed at the correct level, thereby significantly diminishing the possibility of wrong site surgery in the cervical vertebrae. The CCV is a handheld radiolucent shoulder positioning device, or shoulder press, designed to facilitate and optimize the visualization of the cervical vertebrae during surgical approaches by moving and holding the shoulders out of the way in order to visualize an additional two to three vertebrae. Accomplishing this task via the usage of a pair of radiolucent carbon fiber pusher tubes that terminate in matched radiolucent arches, the CCV utilizes an adjustable horizontal crossbar tipped with ergonomic handgrips to transmit the necessary 24 to 37 pounds of motive force upon the patient's shoulders (i.e., the Acromion Clavicular joint) facilitating the transient movement of these structures and thereby allowing optimized visualization of the cervical vertebrae under X-Ray. The utilization of the CCV in this modality is effected by a live operator positioned at the head of the surgical table delivering this motive force thru handheld positioning and manipulation. Thus, the live operator is exposed to radiation from the X-Rays, which is an undesirable consequence of using the CCV. Furthermore, the CCV is often used in a complex surgical environment comprising a multitude of leads, lines and monitoring equipment around which the operator must maneuver, which may be a very difficult task.

[0007] In view of the foregoing, there is a need for improved techniques for providing means for using a shoulder press such as the CCV on a patient without a live operator that may be easily employed in a complex surgical environment.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] The present invention is illustrated by way of example, and not by way of limitation, in the figures of the accompanying drawings and in which like reference numerals refer to similar elements and in which:

[0009] Figure 1 illustrates an exemplary universal table mount for a shoulder press in use on a surgical table, in accordance with an embodiment of the present invention; and

[0010] Figure 2 illustrates an exemplary table mount for a shoulder press for use on patient surfaces without side rails, in accordance with an embodiment of the present invention.

[0011] Unless otherwise indicated illustrations in the figures are not necessarily drawn to scale.

SUMMARY OF THE INVENTION

[0012] To achieve the forgoing and other objects and in accordance with the purpose of the invention, an apparatus for mounting an anatomical positioner on a patient care platform is presented.

[0013] In one embodiment, an apparatus for mounting an anatomical positioner on a patient care platform is presented. The apparatus includes means for securely joining to the patient care platform, means for extending away from the patient care platform, means for moving along a length of the extending means, means for stopping movement in a direction away from the patient care platform, means for releasing the stopping means for allowing movement away from the patient care platform and means for supporting the anatomical positioner, whereby the anatomical positioner is positioned by movement along the extending means and locked in place by the stopping means. In another embodiment the stopping means further allows movement in a direction toward the patient care platform.

[0014] In another embodiment an apparatus for mounting an anatomical positioner on a patient care platform is presented. The apparatus includes a clamping mechanism for allowing an operator to quickly and securely join the apparatus to the patient care platform. Guide rails are joined to the clamping mechanism. The guide rails extend away from the patient care platform. Slides slidably join to the guide rails to allow the operator to position the anatomical positioner to impart a force on a patient on the patient care platform. The slides include brakes for at least stopping movement in a direction away from the patient care platform, and brake releases for releasing the brakes. Supports join to the slides for supporting the anatomical positioner. The supports have restraints for allowing the operator to quickly secure and adjust the anatomical positioner, whereby the anatomical positioner is positioned by the operator to impart the force on the patient and locked in place such that the operator can vacate the immediate area of the patient care platform. In various other embodiments the restraints are pivoting and the brake releases include a lever for the operator to easily handle. In other embodiments the clamping mechanism clamps to accessory side rails of the

patient care platform and the clamping mechanism secures to the accessory side rails of the patient care platform with a twist dial. In yet other embodiments the clamping mechanism clamps to surfaces of the patient care platform and the clamping mechanism clamps to surfaces of the patient care platform with actuating plates. In another embodiment the brakes incorporate an internal friction braking system that allows the operator to move the anatomical positioner toward the patient care platform and stops movement away from the patient care platform. In still another embodiment the brake releases quickly release the brakes for allowing the operator to rapidly move the anatomical positioner away from the patient.

[0015] In another embodiment an apparatus for mounting an anatomical positioner on a patient care platform is presented. The apparatus includes a left clamp for securely joining to a left side of the patient care platform. A right clamp securely joins to a right side of the patient care platform. A left guide rail joins to the left clamp for extending away from the left clamp and parallel to the left side of the patient care platform. A right guide rail joins to the right clamp for extending away from the right clamp and parallel to the right side of the patient care platform. A left slide slidably joins to the left guide rail for moving along a length of the left guide rail. The left slide includes a left brake for at least stopping movement in a direction away from the patient care platform, and a left brake release for releasing the left brake and allowing movement away from the patient care platform. A right slide slidably joins to the right guide rail for moving along a length of the right guide rail. The right slide includes a right brake for at least stopping movement in a direction away from the patient care platform, and a right brake release for releasing the right brake and allowing movement away from the patient care platform. A left upward support is joined to the left slide and extends above the patient care platform for supporting a left side of the anatomical positioner. The left upward support includes a left restraint for securing the anatomical positioner. A right upward support is joined to the right slide and extends above the patient care platform for supporting a right side of the anatomical positioner. The right upward support includes a right restraint for securing the anatomical positioner, whereby the anatomical positioner is positioned by movement along the left guide rail and the right guide rail, and locked in place by the left brake and the right brake. In other embodiments the left restraint and the right restraint are pivoting and the left brake release and the right brake release each include a hand-operated lever. In yet other embodiments the left clamp and the right clamp each clamp to accessory side rails of the patient care platform and the left clamp and the right clamp secure to the accessory side rails of the patient care platform with a twist dial. In still other embodiments the left clamp and the right clamp each clamp to surfaces of the patient

care platform and the left clamp and the right clamp each clamp to surfaces of the patient care platform with actuating plates. In yet another embodiment the left brake and the right brake incorporate an internal friction braking system that allows movement toward the patient care platform and stops movement away from the patient care platform. In still another embodiment the left brake release and the right brake release quickly release the left brake and right brake for rapid movement away from the patient care platform.

[0016] Other features, advantages, and object of the present invention will become more apparent and be more readily understood from the following detailed description, which should be read in conjunction with the accompanying drawings.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0017] The present invention is best understood by reference to the detailed figures and description set forth herein.

[0018] Embodiments of the invention are discussed below with reference to the Figures. However, those skilled in the art will readily appreciate that the detailed description given herein with respect to these figures is for explanatory purposes as the invention extends beyond these limited embodiments. For example, it should be appreciated that those skilled in the art will, in light of the teachings of the present invention, recognize a multiplicity of alternate and suitable approaches, depending upon the needs of the particular application, to implement the functionality of any given detail described herein, beyond the particular implementation choices in the following embodiments described and shown. That is, there are numerous modifications and variations of the invention that are too numerous to be listed but that all fit within the scope of the invention. Also, singular words should be read as plural and vice versa and masculine as feminine and vice versa, where appropriate, and alternative embodiments do not necessarily imply that the two are mutually exclusive.

[0019] The present invention will now be described in detail with reference to embodiments thereof as illustrated in the accompanying drawings.

[0020] Preferred embodiments of the present invention provide a table attached device, or universal table mount, for a shoulder press that provides a firm and stable, horizontal cradled platform upon which the shoulder press can travel and lock in such a way as to effectively and consistently replicate the action and application of sustained force for the duration of an X-Ray, which would otherwise be delivered by a live operator. By providing a generally consistent and reliable platform, the table mount allows for the reliable and correct positioning and quick release of the shoulder press without the necessity or presence of a live operator during the actual patient X-Ray, thereby generally eliminating the possibility of exposure to radiation for all personnel. Without a table mount according to preferred embodiments, the handheld nature of the shoulder press device offers no such protection and precludes the use of the shoulder press device in environments where a C-ARM (i.e., Intraoperative Fluoroscope) is utilized due to harmful exposure levels. Additionally, by providing a stable platform for the shoulder press throughout the entire

duration of a surgical procedure, the table mount allows for one time set-up and continuous positioning of the shoulder press in immediate proximity to the usage site, thereby generally eliminating the complicated procedure of maneuvering and positioning the shoulder press in the ubiquitous environment of leads, lines, anesthesia and monitoring equipment, as well as greatly simplifying the usage of the shoulder press without disturbing these sensitive arrays. However, alternate usages for preferred embodiments of the present invention may be conceived such as, but not limited to, usage in an X-Ray room, usage by paramedics, usage in the trauma specialty for diagnosis, usage by orthopedic surgeons as a surgical positioner for patient extremities during revision hip arthroplasty, etc. Further alternate usages for preferred embodiments of the present invention may also be conceived such as, but not limited to, usage in various surgical, diagnostic and imaging procedures as an anatomical positioner for applications throughout the entire human anatomy relating to all aspects of patient care and specialties. Yet other alternative usages for preferred embodiments of the present invention may also be conceived such as, but not limited to, usage relating to all surgical specialties as a platform for the positioning and manipulation of tools, equipment, and necessities relating to all aspects of patient care, including, but not be limited to, surgical, diagnostic and imaging of patients. It is further contemplated that alternate usages for preferred embodiments of the present invention may also be conceived such as, but not limited to, usages relating to all aspects of veterinary care.

[0021] Figure 1 illustrates an exemplary universal table mount 101 for a shoulder press 103 in use on a surgical table 105, in accordance with an embodiment of the present invention. In the present embodiment, table mount 101 is comprised of two distinct yet mirror imaged sections, a dedicated right section 107 and a dedicated left section 109. Alternate embodiments may be implemented in which the left and right sections of the mount are connected. In the present embodiment, right section 107 and left section 109 clamp onto surgical table 105, which is equipped with industry standard accessory side rails 111 provided by table manufacturers for the use of the surgical staff in mounting various necessary equipment to surgical table 105 for use during surgery. Accessory side rails 111 may use American standard or metric measurements, and universal table mounts according to preferred embodiments of the present invention may be available in distinct clamping sizes to accommodate these industry standards. Right section 107 and left section 109 of table mount 101 slide easily onto accessory side rails 111, and an attachment mechanism 113 fully seats and is secured with a simple twist dial 115. Guide rails 117 extend from attachment mechanisms 113 onto which upward supports 118 are slidably attached with slides 119. Attachment

mechanisms 113 are preferably made of aluminum; however, the attachment mechanisms in alternate embodiments may be made of different materials such as, but not limited to, different metals or plastic. Guide rails 117 and upward supports 118 are preferably one-inch square aluminum bars. However, those skilled in the art, in light of the present teachings, will readily recognize that the mount rails and upward supports in alternate embodiments may be made in different shapes and sizes and be made of various different materials such as, but not limited to, different metals or plastic. Furthermore, slides 119 are preferably made of plastic; however, alternate materials such as, but not limited to, various metals may also be used. In the present embodiment, slides 119 comprise handbrakes 121 that enable upward supports 118 to be locked into place on guide rails 117.

[0022] In typical use of the present embodiment, after mounting table mount 101 to accessory side rails 111, placement of shoulder press 103 within a shoulder press cradle is quick and easy, and shoulder press 103 is secured within the shoulder press cradle with adjustable/pivoting L-Shaped restraints 123 provided to accommodate this function. After positioning and adjusting shoulder press 103 to the proper width to effectively migrate the shoulders distally within table mount 101, an operator may apply the 24 to 37 pounds of motive force upon the Acromion-Clavicular joint with shoulder press 103 by squeezing handbrakes 121 and pushing upward supports 118 or shoulder press 103 toward the patient on surgical table 105. The application of motive force by the operator along with the hand actuation of handbrakes 121 advances the position of shoulder press 103. When shoulder press 103 is correctly positioned, the operator releases handbrakes 121 to lock sliders 119 and therefore shoulder press 103 in place. The operator may swiftly and easily unlock and move shoulder press 103 away from the patient by squeezing handbrakes 121 and pulling back. Some embodiments may also comprise a quick release mechanism for the handbrakes so that the shoulder press may be immediately moved away from the patient in case of an emergency.

[0023] In alternate embodiments, the travel of the upward supports and the shoulder press within the shoulder press cradle along the guide rails is unidirectional toward the patient. In these embodiments the upward supports are able to move freely toward the patient and are prevented from moving away from the patient through the incorporation of an internal friction braking system. The actuation of a brake release allows for a reversal of travel away from the patient by releasing the internal friction braking system. The friction brake resists all backward motion due to tilting and comprises a hand control that reorients the tilt by finger tapping in order to enable backward

movement. The friction brake preferably uses a large trigger somewhat akin to a bicycle handbrake lever. However, a bicycle brake uses a caliper style set of rubber pads whereas this friction brake uses no calipers, discs or pads and instead utilizes the slight offset of a channel and the guide rail of the table mount to halt backward motion unless the internal offset is lessened through application of the trigger/brake release. Other alternative embodiments may employ differing means for halting the backward motion. These other alternative means will also have at least one hand control means for enabling backward movement.

[0024] Figure 2 illustrates an exemplary mount 201 for a shoulder press 203 for use on patient surfaces without side rails, in accordance with an embodiment of the present invention. In the present embodiment, mount 201 comprises variable clamps 207 rather than attachment mechanisms for sliding onto an accessory side rail. Variable clamps 207 slide over the edges of a patient surface and are held in place by actuating plates 209 that squeeze the edges of the patient surface when clamp locks 211 are employed. In other alternative embodiments clamps may be locked into position by any number of devices such as, but not limited to, levers, dials, knobs, etc. that are deemed appropriate to the patient anatomy the alternate embodiments address. This enables mount 201 to be attached to surfaces other than operating room surgical tables with side rails for example, without limitation, other types of patient beds and tables, paramedic long boards, imaging tables, exam tables, etc., any other patient care surfaces unrestricted to unrestricted to horizontal positions, and whatever variable geometry offered by the patient care surface, whether fixed or movable during usage

[0025] Paramedics often carry patients on long boards, and when a patient has a suspected subluxation injury (i.e., broken neck), they are brought to the emergency room (ER) on such a long board and typically remain on this long board throughout the ER experience. In typical use of the present embodiment, shoulder press 203 may be attached to a long board with mount 201 to quickly assist in correct visualization of the cervical spine of the patient to determine if there is an injury.

[0026] Having fully described at least one embodiment of the present invention, other equivalent or alternative methods of providing a table mount for a shoulder press or anatomical positioner according to the present invention will be apparent to those skilled in the art. The invention has been described above by way of illustration, and the specific embodiments disclosed are not intended to limit the invention to the particular forms disclosed. For example, the particular

implementation of the table mount may vary depending upon the particular type of shoulder press used. The table mounts described in the foregoing were directed to implementations for use with the CCV; however, similar techniques are to implement table mounts for use with various different shoulder presses, anatomical positioners, equipment positioners, etc. Implementations of the present invention implemented for use with shoulder presses other than the CCV are contemplated as within the scope of the present invention. The invention is thus to cover all modifications, equivalents, and alternatives falling within the spirit and scope of the following claims.

What is claimed is:

CLAIMS

1. An apparatus for mounting an anatomical positioner on a patient care platform, the apparatus comprising:

means for securely joining to the patient care platform;

means for extending away from the patient care platform;

means for moving along a length of said extending means;

means for stopping movement in a direction away from the patient care platform;

means for releasing said stopping means for allowing movement away from the patient care platform; and

means for supporting the anatomical positioner, whereby the anatomical positioner is positioned by movement along said extending means and locked in place by said stopping means.

2. The apparatus as recited in claim 1, wherein said stopping means further allows movement in a direction toward the patient care platform.

3. An apparatus for mounting an anatomical positioner on a patient care platform, the apparatus comprising:

a clamping mechanism for allowing an operator to quickly and securely join the apparatus to the patient care platform;

guide rails joined to said clamping mechanism, said guide rails extending away from the patient care platform;

slides slidably joined to said guide rails to allow the operator to position the anatomical positioner to impart a force on a patient on the patient care platform, said slides comprising brakes for at least stopping movement in a direction away from the patient care platform, and brake releases for releasing said brakes; and

supports joined to said slides for supporting the anatomical positioner, said supports comprising restraints for allowing the operator to quickly secure and adjust the anatomical positioner, whereby the anatomical positioner is positioned by the operator to impart the force on the patient and locked in place such that the operator can vacate the immediate area of the patient care platform.

4. The apparatus as recited in claim 3, wherein said restraints are pivoting.
5. The apparatus as recited in claim 3, wherein said brake releases comprise a lever for the operator to easily handle.
6. The apparatus as recited in claim 3, wherein said clamping mechanism clamps to accessory side rails of the patient care platform.
7. The apparatus as recited in claim 6, wherein said clamping mechanism secures to the accessory side rails of the patient care platform with a twist dial.

8. The apparatus as recited in claim 3, wherein said clamping mechanism clamps to surfaces of the patient care platform.
9. The apparatus as recited in claim 8, wherein said clamping mechanism clamps to surfaces of the patient care platform with actuating plates.
10. The apparatus as recited in claim 3, wherein said brakes incorporate an internal friction braking system that allows the operator to move the anatomical positioner toward the patient care platform and stops movement away from the patient care platform.
11. The apparatus as recited in claim 3, wherein said brake releases quickly release said brakes for allowing the operator to rapidly move the anatomical positioner away from the patient.
12. An apparatus for mounting an anatomical positioner on a patient care platform, the apparatus comprising:
 - a left clamp for securely joining to a left side of the patient care platform;
 - a right clamp for securely joining to a right side of the patient care platform;
 - a left guide rail joined to said left clamp for extending away from said left clamp and parallel to the left side of the patient care platform;
 - a right guide rail joined to said right clamp for extending away from said right clamp and parallel to the right side of the patient care platform;
 - a left slide slidably joined to said left guide rail for moving along a length of said left guide rail, said left slide comprising a left brake for at least stopping movement in a direction away

from the patient care platform, and a left brake release for releasing said left brake and allowing movement away from the patient care platform;

a right slide slidably joined to said right guide rail for moving along a length of said right guide rail, said right slide comprising a right brake for at least stopping movement in a direction away from the patient care platform, and a right brake release for releasing said right brake and allowing movement away from the patient care platform;

a left upward support joined to said left slide and extending above the patient care platform for supporting a left side of the anatomical positioner, said left upward support comprising a left restraint for securing the anatomical positioner; and

a right upward support joined to said right slide and extending above the patient care platform for supporting a right side of the anatomical positioner, said right upward support comprising a right restraint for securing the anatomical positioner, whereby the anatomical positioner is positioned by movement along said left guide rail and said right guide rail, and locked in place by said left brake and said right brake.

13. The apparatus as recited in claim 12, wherein said left restraint and said right restraint are pivoting.
14. The apparatus as recited in claim 12, wherein said left brake release and said right brake release each comprise a hand-operated lever.
15. The apparatus as recited in claim 12, wherein said left clamp and said right clamp each clamp to accessory side rails of the patient care platform.

16. The apparatus as recited in claim 15, wherein said left clamp and said right clamp secure to the accessory side rails of the patient care platform with a twist dial.
17. The apparatus as recited in claim 12, wherein said left clamp and said right clamp each clamp to surfaces of the patient care platform.
18. The apparatus as recited in claim 17, wherein said left clamp and said right clamp each clamp to surfaces of the patient care platform with actuating plates.
19. The apparatus as recited in claim 12, wherein said left brake and said right brake incorporate an internal friction braking system that allows movement toward the patient care platform and stops movement away from the patient care platform.
20. The apparatus as recited in claim 12, wherein said left brake release and said right brake release quickly release said left brake and right brake for rapid movement away from the patient care platform.