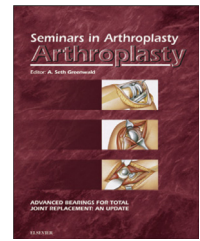


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The gripper table mounted retraction system: A tireless surgical assistant[☆]

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ABSTRACT

The Gripper Table Mounted System (Gripper™) is comprised of a pulley system that is table mounted on attachable posts and can be used to provide retraction in place of surgical assistants. It accepts flat handled retractors and provides constant retraction. It can be particularly helpful during surgeries that require multiple surgical hands such as the direct anterior approach for total hip replacement. The system is adaptable and can be used in a variety of settings with different types of retractors. Preliminary experiences indicate its potential as a cost effective substitute for at least one surgical assistant.

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Classically, surgical assistants provide hands for retraction and suction during orthopaedic surgery. Depending on the setting and the surgery, 1–3 surgical assistants may be needed. While academic settings may have the luxury of multiple hands due to the presence of fellows, residents, and medical students, community and rural settings are often limited in the number of surgical assistants available. Due to variable levels of training, it can be difficult to ensure quality of the surgical assistant and as such, physician assistants (PAs) are often chosen to assist. The quality of a surgical assistant has the potential to influence operative time and overall surgical flow. Consequently, ensuring optimal quantity and quality of surgical assistants is an important component of efficient orthopaedic surgeries.

The direct anterior (DA) approach has been increasingly utilized for total hip replacements (THA). During a DA THA, multiple hands are need to work in the surgical field. Another challenge of the approach is a minimal view of the surgical field. Consequently, retraction is sometimes missed by assistants and in the attempt to regrip, the field of view of the surgeon can be further decreased.

The Gripper Table Mounted System (Gripper™) is comprised of a pulley system that is table mounted on attachable posts and can be used to provide retraction (Fig. 1). It is sterile in the surgical field and setup on the back table. The system is such that it accepts flat-handled retractors and essentially provides constant, tireless retraction. The retractors are inserted into the gripper system and once the system is tightened it is a dual pulley system which can be released and tightened as needed. All together, the pulley system and retractor form three points of fixation. There are table-mounted posts that can be used for the K table and for the Hana table, and in either set up the posts are draped (Fig. 2).

During exposure of the acetabulum, a small curve retractor over the front of the acetabulum can be rigged to the pulley system. Consequently, the surgeon can control the retractor so that they can ream without an assistant moving the retractor or decreasing their field of view. During femoral preparation, the Gripper™ can be used to hold a retractor over the greater trochanter in order to expose the femoral neck. This ensures that the retractors remain stable and there is no unnecessary

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Figure 1 – The basic component of the Gripper Table Mounted System (Gripper™) is dual pulley system (A) in which a flat handled retractor can be fit into the Gripper™.

movement. Additionally, during femoral preparation the Gripper™ can be used as well by switching its position on the table so that it is holding the retractor over the greater trochanter (Fig. 3). The exposure of the femoral neck with the Gripper™ ensures that the retractors remain stable and there are no unnecessary movements.

The Gripper™ has a standard attachment of the host for all OR tables but it can also be customized. Medenvision, the company that makes the Gripper™, can replicate retractors and make the handle flat so that they will fit into the gripper. The Gripper™ can also be used for total knee replacements (TKRs), potentially with multiple grippers to free up as many assistants as possible due to the particularly physical nature of TKRs (Fig. 4).

The Gripper™ has the potential to replace at least one surgical assistant. The starting salary of a surgical technician is about 60,000 United States Dollars (USD). Additionally, in the advent that a PA is chosen due to experience and overall

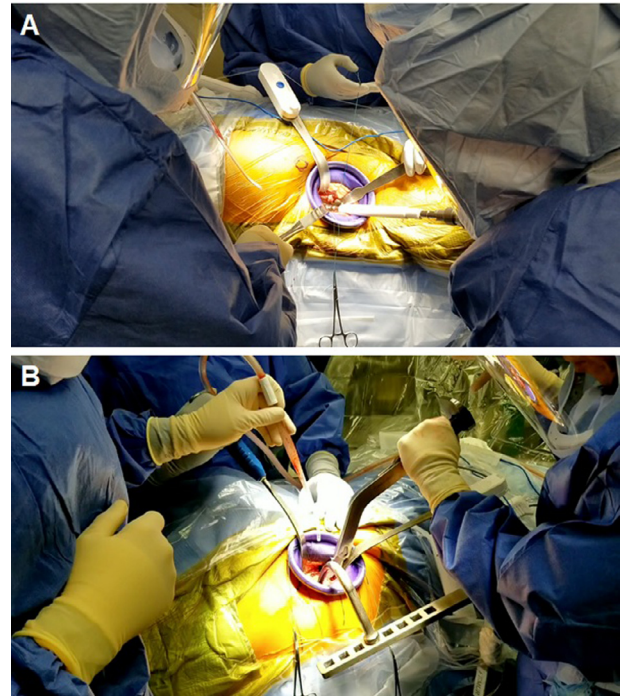


Figure 3 – The Gripper™ can be used for acetabular exposure to hold a curved retractor over the acetabulum (A), as well as for femoral preparation to hold the retractor over the greater trochanter and expose the femoral neck (B).

quality, that will further increase costs as the national average salary for an orthopaedic PA is estimated at a little over 100,000 USD. A surgical assistant would have to assist in over 300 cases per year to be more cost effective than Gripper™. Moreover, the nature of the tool is such that it does not fatigue, does not have to adjust handhold, and it does not move, all of which surpasses a human assistant.

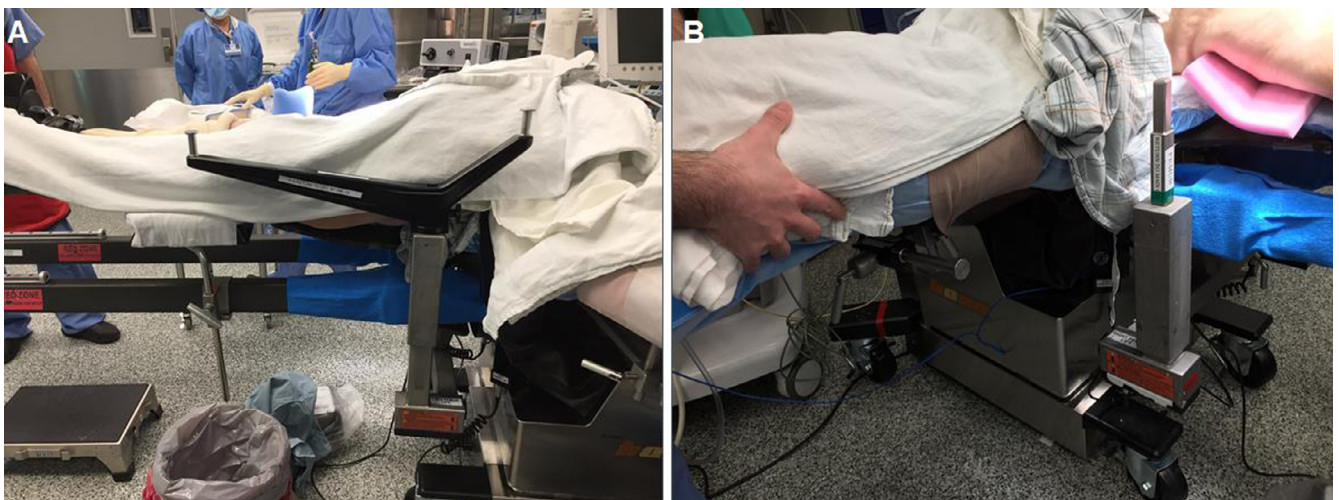


Figure 2 – The attachment posts used with the Gripper™ for the HANA table can be attached to the HANA table on the side of the contralateral leg (A), or on the side of the operative leg under the arm board (B).



Figure 4– The Gripper™ being used during a TKR with multiple grippers utilized to hold retractors and enable surgical assistants to be available for other tasks during the surgery.

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Disclosure

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