

Spinal Decompression Through a Tubular System with Assisted Endoscopy

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Abstract

Endoscopic surgery has become an important tool in spinal surgery, the ergonomic design and the required length of the instruments, as well as the use of video monitors greatly affect our perception and performance. Some experts are resistant to the use of the endoscope in spinal surgery, because of the limitations in the perceptual information and that this can lead us to commit incorrect actions during the surgical procedure. Since the introduction in 1997 by Smith and Foley of a system consisting of progressive tubular dilators (MED) to later place an endoscopic vision system, the technique has become increasingly popular to this day. Based on this, other authors have documented the use of this endoscopic tubular system called Easy-Go reporting good results, so the authors of this article focus on the intraoperative peculiarities, experience, first impressions and the technical note of this system. (EASY-GO).

Key words: spinal decompression; endoscopic; HD fluoroscopy.

Introduction

Endoscopic surgery has become an important tool in spinal surgery, the ergonomic design and the required length of the instruments, as well as the use of video monitors greatly affect our perception and performance. Some experts are resistant to the use of the endoscope in spinal surgery, because of the limitations in the perceptual information and that this can lead us to commit incorrect actions during the surgical procedure [5].

Nonetheless, the new improvements and introductions to new endoscope equipment Full HD, and some 3D have shown important results with images commensurable with microscope [1,15]. Since 2007 the high definition HD cameras with LED light are available to endoscopic neurosurgical procedures [6].

Furthermore, since the introduction in 1997 by Smith and Foley of a progressive tubular dilators system (MED) that later it had an endoscopic vision system, the technique has become increasingly popular to this day [2]. Actually this system (MED) it is not only for disectomy, also for a great variety of pathologies, like lumbar stenosis decompression [10,3,16] among others.

The idea of minimally invasive surgery decrease the tissue damage [7,8,9,11,12,13,14] and postoperative discomfort, demands the quest and development of new techniques and instrumental like illumination system and magnification [4].

Based on this, other authors [6] have been documented the use of the tubular endoscopic system called Easy-Go, reporting good results and proposing a learning curve(6,19) and less extensive training. If exists a nonconformity respect of the use of this new endoscopic system, we have the resource to make the immediate exchange for the microscopic. While we acquaint with this new technology, consequently the authors of this article focus on the intraoperative peculiarities, experience, first impressions and the technical note of this system. (Easy Go).

Material and Methods:

Endoscopic system:

The "Easy Go [Gaab-Oertel]" system, consists in a progressive tubular dilators to do a Transmuscular surgical access (**Figure.1**).

The surgical procedure is done through a tube with a exterior diameter of 19 mm (**Figure.2**).



Figure 1: Placement of the work tube through the tubular dilatation system



Figure 2: Placement of the endoscopic in work tub

endoscopic sight, they have to work in a complete endoscopic sight through a second generation 25° Hopkins-II optic, the optic can be rotate 270° through the holder of this. Also they have different endoscopic lengths as well as tubes and diameters to allow flexible positions and different depths. The optic is set to the work deck and then to the surgical table.

Surgical procedure:

The surgical procedure has to be under general anesthesia, in some cases used total intravenous anesthesia (TIVA).

The patient will be in prone-decubitus position, previous asepsia and antisepsia of the area. Placement of the surgical field, under sight in real time with fluoroscopy, make a surgical mark of the area.

A para-medial incision is made with length of 2 cm, the skin is opened and incise the posterior thoracolumbar fascia and spinal erector muscle fascia, a tube holds to the article arm, previously fixed to the surgical table and then the adapter of the tube gets the position for the optic sight of 25° Hopkins-II (**Figure.3**). Starts the bimanual endoscopic time (**Figure.4**).

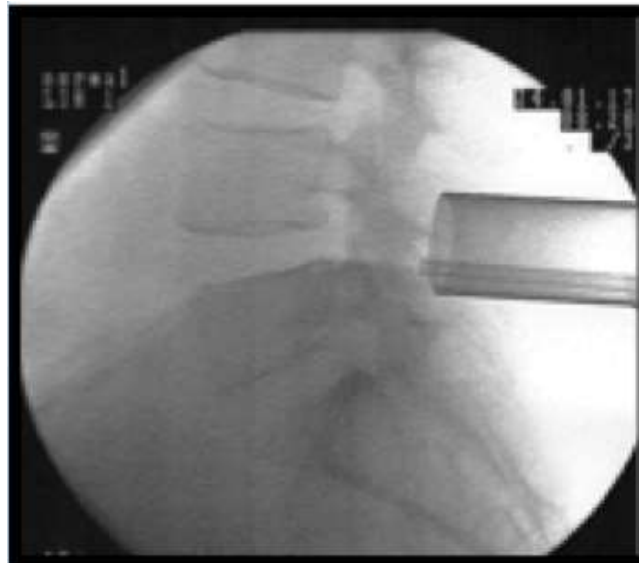


Figure 3: Visualization in real time of the work tube with HD fluoroscopy

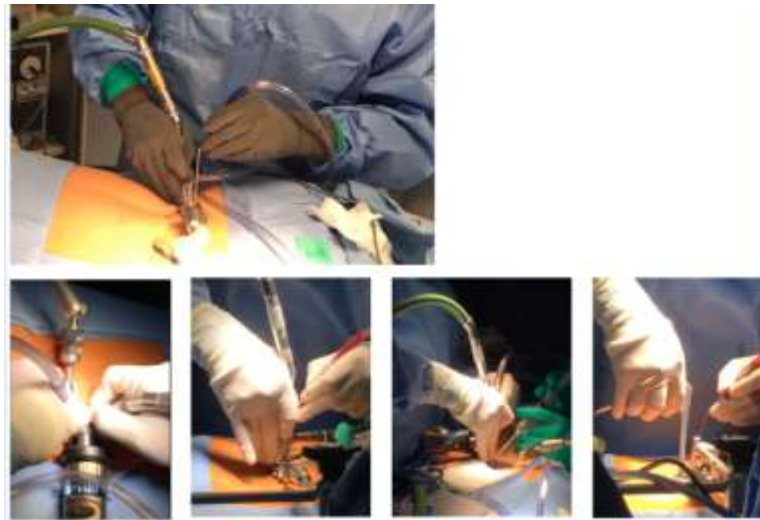


Figure 4: Transoperative sequence of bimanual endoscopic time through work tube

Starts the miller of the lamina with drill bit match head 14MH30 of high speed (MidasRexMR) and Kerrison punch forceps, the flavum ligamentum is visualized and retired, the entrance area of the intertransverse foramen is explored taking in consideration the lateral ipsilateral recess and then tilt the tube and have a oblique

sight of the entrance of the same area and make the same procedure comented for the bilateral descompression trough an unilateral surgical access, descompression is corroborated to “complacency” of the surgeon, hemostasia is corroborated and close the surgical incisión by planes. Drains are not placed in any case (**Figure.5**).

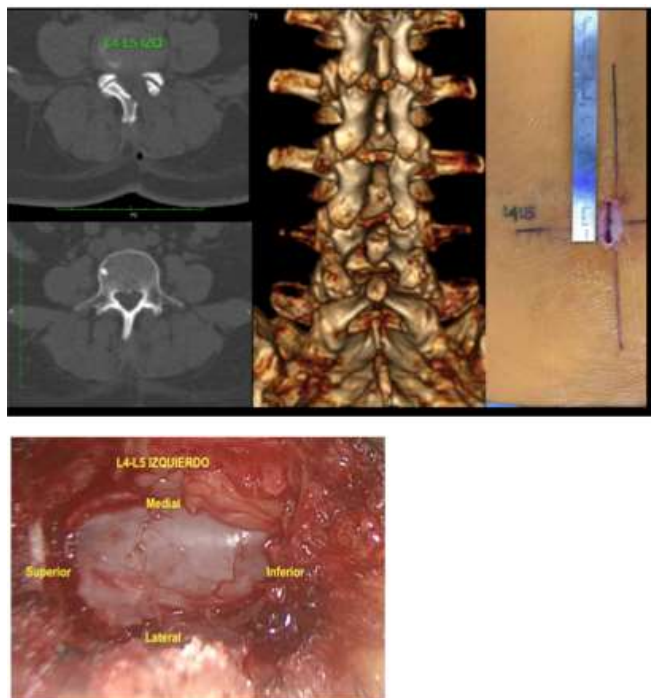


Figure 5: Posoperative tomography, show us the left unilateral laminotomy in L4-L5 segment and the length of the surgical incision. Final result of the spinal conduct descompression in L4-L5 segment

Results

After any procedure, you have to make an analysis about the problems, advantages and disadvantages tan the Easy Go-II system presents.

In the first cases, it was always necessary to contain the microscope ready, when we were in the transition and acquaint with the tubular endoscopic equipment, with the objective to change for a 3D vision with the microscope in the pertinent moment. . Occasionally we realized the change to the microscope because the decompression

was considered too slow and was necessary that followed the chronology of the surgical time in the room of operations and in other occasions by fault of preception of depth or the no suitable identification of the anatomical structures doing that the surgeon does not seat unsuspecting and/or comfortable regarding the decompression. In two cases we did not have the microscope forcing us therefore to realize the decompression in his whole with the endoscopic system and this generarted more confidence for the following cases, in which it did not have microscope.

The progresive tubular dilator system developed by Smith and Foley [2] was created to treat lumbar hernias, today this system is aplicated for another pathologies of the spine, for example; spinal descompresión by lumbar, cervical or thoracic stenosis among others. The time show us satisfactory results of this technique because is a minimally invasive procedure [17,18]. We adopt this new system since 2017 because in some cases we are not available to have a microscopic and this endoscopic tubular system is portable, flexible an dynamic. Within of the advantages of this system is that the surgical procedure if the surgeon can not feel comfortable he can exchange the 2D vision for the 3D vision inmediatly whitout need to lost the surgical deck, this way the surgeon will be training to perform surgeries progressively with the endoscopic system. We can corroborate than the learning curve and the training is fast and short [9], minimizing the surgical times.

In the last years there have been discovered minimal invasive endoscopic techniques with advantages and desadvantages, this system is one of the neurosurgical arsenal (20). Netherless the present study does not excludes any option about the literature. Finally we considered that more studies required in the future for the long term follow up whit this technique to show the advantages and desadvantages of this system.

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