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## ORIGINAL NEW SURGICAL DEVICE - THE "GRASPING TIE" ITS USE IN LOW COLO-RECTAL ANASTOMOSIS

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**Abstract:** The grasping tie is an original and mechanical tool, conceived and planned to be used in digestive surgery to do the equivalent of a purse string [1]. Its use is conceived to make easier the mechanical anastomosis in the more difficult situations as the oesophag-jejunal [3] or the very low colo-rectal ones [2, 5, 6], as in the example of the presented paper.

A thin ribbon of nylon will be progressively tightened as a one-way running knot directly upon the tract of the gut, either directly or about the axis of a circular stapler. Once completed the stapler suture it will be completely extracted together with the muscle-mucosal rings, so that nothing of the ribbon remains in the patient.

The use of the grasping tie is also advantageous in quickly closing the gut above and below a tumour, to a safer manipulation and to reduce the contamination of the operative field [4]

### INTRODUCTION

A new surgical device, aimed to make easier the mechanical suture by a circular stapler, has been conceived and built (Fig.1,A).

Beyond the possibility to fix a tract of the gut on the axle of a circular stapler – head pivot or anvil axle - in the preparation of a mechanical circular anastomosis, as a substitute of a classical purse string, it is particularly useful when operating in very narrow anatomical spaces as in the deep pelvis [2, 5, 6] or among the pillars of diaphragm [3] thanks to its reduced operative dimensions. The tool was therefore designed to facilitate the mechanical stapler suture after total gastrectomy [3] or low rectal resection [2,5,6].

Its particular and more profitable use is evident in the conservative surgical treatment of a low rectal cancer, also before the introduction in the anus of the circular stapler as illustrated.

### METHOD (Fig.1)

At the end of a rather long barrel, 25 cm, a patented mechanism (Fig.1,A) fastens a nylon loop around the rectum below the tumour (Fig.1,B), closing definitively and irreversibly twice its lumen with two running knots, and then a cutter eliminates the exuberant tail of the loop.

Two levers on the handle of the device (Fig. 1 A), shaped as a gun, remotely activate all the functions of the device: the first, the longer one, fastens progressively with a repeatedly movement the loop in running-knot, the other – a trigger – activates finally the cutter when the knot is fastened.

The reduced size of the barrel tip makes easy its introduction deeply also in a narrow pelvis after the accurate preparation of the rectum, with preliminary section of both the rectal wings and complete dissection of the intact mesorectum.

### RESULTS

A first nylon loop (Fig1, A – cartouche) is fastened just distal to the tumour site, while a second loop is finally fastened a bit further (Fig.1,B). The cutting of the low rectum among the two nylon ring-knots (Fig.1,C) permit the separation of the rectum where the tumour is located and its distal stump where the mechanical suture has to be made. The proximal rectum is then taken away from the pelvis, leaving free to the sight the distal stump and the entire operative field.

An enteral dilator is introduced in the anus, putting in tension the distal stump behind the bladder or the vagina in cranial direction (Fig.1,D). It is possible now, under com-

plete sight control, to prepare manually a purse string on the rectal stump below the second nylon knot-ring, rubbing with the needle against the smooth steel head of the dilator (Fig.1, D – E).

Once the purse string has been completed the distal part of the stump with the remaining nylon ring-knot is cut away, the enteral dilator is replaced by a circular stapler introduced in the anus and the purse string is tightened around the extruded pivot of the stapler (Fig.1,F). Afterwards the head of the stapler, just fixed in the distal colon, is connected to the axle of the stapler itself (Fig.1, G). It is now extremely simple to complete the mechanical suture activating the stapler (Fig.1,H).

A simulation of the entire procedure is illustrated in the Fig. 2, 3, 4, 5, 6, 7, 8, using a tract of human colon, because of the technical difficulties to take demonstrative photographs in the deep of the pelvis.

### CONCLUSION

The usefulness of the tool is evident for the reduced dimensions of the operative tip and for the possibility of driving the two active levers far from the site of sticking of the nylon running knots.

The tools, designed to facilitate the mechanical stapler suture after total gastrectomy or low rectal resection, will be used in conjunction with a circular stapler.

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