



Commentary on transanal minimally invasive surgery for rectal lesions

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We read the article of Quaresima *et al.* (1) entitled “Transanal minimally invasive surgery for rectal lesions”, published in *The Journal of the Society of Laparoendoscopic Surgeons*, with great interest.

The authors present a series of 31 consecutive patients, with mid and high rectal tumors, who were treated with TAMIS, between 2011 and 2016. The indications for the procedure were: T1 adenocarcinoma (54.8%), large adenomas (32.2%), GIST (6.5%), and carcinoid (6.5%). The mean distance of the lesions from the anal verge was 9.5 cm (range: 6–15 cm) and the mean tumor diameter was 2.4 cm (range: 1–5 cm). From the technical point of view, all patients had been placed in Lloyd-Davis position, two types of platforms (SILS and GelPath) were used and a full thickness rectal wall resection was the preferable surgical choice, while the rectal wall defect was sutured in all cases. In five patients intraperitoneal entry occurred, but in all of them, transanal suture of the defect was achieved without consequences. Although no conversion to laparotomy or laparoscopy was necessary, the method failed in two patients (6.5%) but even so, they were treated with the classic transanal technique. The postoperative complication rate was 9.6% and resection margins negativity was achieved in 96.8%. Within a mean follow up of 30 months, only one recurrence in a large adenoma, treated endoscopically, was observed.

The results of Quaresima’s study (1) are in consistency with other published reports. The only systematic review (2) of 390 TAMIS resections, disclosed: a 3.0 cm average size of lesions resected, located within a mean distance of 7.6 cm from the anal verge (range: 3–15 cm), an overall margin positivity rate of 4.36%, a tumor fragmentation rate of 4.1%

and an overall complication rate of 7.4%.

The largest single-center review of TAMIS outcomes (3) disclosed: a mean lesion size of 3.2 cm, located within a median distance of 10 cm from the anal verge, while malignant lesions represented the 22.7% of the study population. The platform used was either GelPath or SILS. In three patients there was intraperitoneal entry; that were closed transanally, postoperative complication rate was 4%, one patient had a fragmented lesion (1.3%), while five patients had positive resection margins. Within a median follow up of 39.5 months, recurrence was present in only one patient.

TAMIS is a fairly new technique and surgical community has not yet decided if it is a technique that is going to last in time. The results of TAMIS are mainly based on retrospective studies and case reports (4).

Current knowledge addresses that: TAMIS is defined as the use of any multichannel single-port which can be placed transanally, combined with the use of ordinary laparoscopic instruments, such as a laparoscopic camera (preferably a 5-mm, 30° or 45° lens) and a standard laparoscopic carbon dioxide insufflator for performing endoluminal and more recently, extraluminal surgery (5). There are approximately eight different platforms described in the literature, which has led to the creation of what is known as the TAMIS device or GelPOINT Path (3). Moreover, a “glove TEM port” has been (5) described and successfully used (6).

According to the NCCN guidelines (7), local excision of rectal tumors by using the TAMIS technique is clearly recommend for: (I) mobile/nonfixed rectal tumors; (II) less than 3 cm in size; (III) occupying less than 1/3 of the circumference of the bowel; (IV) not extending beyond

the submucosa (T1); which are (V) well to moderately differentiated; and (VI) with low-risk histopathological features. On the other hand, local excision should be avoided in cases of lymphovascular invasion, perineural invasion and mucinous components which are considered as high-risk characteristics, with high lymph node metastatic potential.

The feasibility of the method is supported by all studies. The technique has a great adoption among the vast majority of colorectal surgeons, while surgeons are reluctant to adopt TEMS, mainly because of its cost and the steep learning curve (8). As pointed in the current study (1), none of the surgeons had previous experience with TEM technique, but all had substantial laparoscopic single-port device experience. Moreover, the TAMIS platform allows surgeons to translate familiar laparoscopic skills to transanal surgery, which is expected to result in rapid acquisition of the skills necessary for competency (9).

The results of TAMIS are mainly gathered retrospectively. Although the conversion rate to laparotomy or laparoscopy has been reported as 0% in Quaresima's *et al.* study, literature addresses a mean conversion rate of 3.1% (1). In the largest (n=75) multicenter series on TAMIS (10), intraoperative complications occurred in 8% and postoperative morbidity rate was 19%, with only one patient requiring re-intervention. In the only systematic review (2), overall complication rate was 7.4%. However, in the two most recent published reports (1,3) the complication rate has decreased to 4%.

The main intraoperative complication of the technique is the intraperitoneal entry, which occur more frequent in upper (more than 10 cm from the anal verge) and anterior (more than 8 cm from the anal verge) lesions (1). A recent report from Molina *et al.* (11), concludes that TAMIS has a higher risk of intraperitoneal entry in upper rectum tumors, mainly because of the shorter length of the platform. Thus, the authors advice the use of a longer or a rigid platform when approaching anterior and upper rectal lesions. Literature addresses that most of the defects can be sutured transanally (1,3).

The best method for the rectal wall defect closure after a full-thickness excision is still debated. Hahnloser *et al.* (10) reported no difference in the incidence of postoperative complications whether the rectal defect was closed or left open. Our opinion is that if peritoneum is entered, the defect should be always closed, while a defect below the peritoneal reflection, may be left open (4).

The oncologic outcomes of TAMIS are based in short

term results. Tumor fragmentation rate of 4.1% has been reported in the systematic review (2), while in the Quaresima *et al.* (1) study this rate dropped to 1.3%.

En block resection of the tumor is mandatory for R0 resection achievement, something not feasible with the endoscopic approach. R1 resection rate has been reported as 4.36% in the systematic review (2), as 3.2% in Quaresima *et al.* (1) study, while Keller *et al.* (3) reported 5 out of 75 patients with positive margins, 3 of whom were diagnosed with T2 tumors. Thus, patient selection is crucial for a favorable oncological outcome.

TAMIS has no impact to anorectal function, since the overall QoL was improved after the procedure, probably due to the removal of the tumor (12).

Finally, taking under consideration that the initial capital investment cost for TEM equipment is estimated at up to \$60,000 on average, while the TAMIS approach, carries a per procedure equipment cost of about \$500–650 over traditional laparoscopic surgery, makes the TAMIS procedure obviously cost-effective compare to TEMs technique (8,9).

In conclusion, as stated by Atallah *et al.* (13), TAMIS is giant leap forward. Its application in selected patients and under absolute indications can change the treatment for rectal cancer tumors.

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Footnote

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