ABCDDV/833

ABCD Arq Bras Cir Dig
2012;25(1):

Original Article

BRAZILIAN EXPERIENCE IN OBESITY SURGERY ROBOT-ASSISTED

Experiência brasileira inicial em cirurgia da obesidade robô-assistida

Ricardo Zugaib **ABDALLA**, Rodrigo Biscuola **GARCIA**, Claudio Renato Penteado de **LUCA**, Rafael Izar Domingues da **COSTA**, Claudia de Oliveira **COZER**

From Syrian–Lebanese Hospital, São Paulo, SP, Brasil.

ABSTRACT – ***Background*** - Minimally invasive techniques were associated with bariatric surgery, leading to a decrease in aggression to the organs and systems. Robotic surgery is a new possibility within the concept of minimal invasion. ***Aim*** - To evaluate the initial experience of robotic surgery for obesity. ***Methods*** – Twenty seven patients were operated in the same hospital, by the same team with the same surgical system, Da Vinci S. ***Results*** - Were performed six gastric band placement , five sleeve gastrectomies and 16 gastric bypasses. There was one major complication and no death in this series. ***Conclusions*** - The robotic surgery for obesity surgery was safe during the initial experience.

HEADINGS - Obesity/surgery. Robotics. Surgical procedures, minimally invasive.

Correspondence:
Ricardo Zugaib Abdalla,
e-mail: ricardo.abdalla@hsl.org.br

Financial source: none
Conflicts of interest: none

Received for publication:
Accepted for publication:

RESUMO – ***Racional*** - As técnicas minimamente invasivas associaram-se à cirurgia bariátrica propiciando redução na agressão aos órgãos e sistemas. A robótica é uma nova possibilidade dentro do conceito de mínima invasão. ***Objetivos*** - Avaliar a experiência inicial da robótica em cirurgia da obesidade. ***Métodos*** - Foram operados 27 pacientes no mesmo hospital, pela mesma equipe, com o mesmo sistema cirúrgico que foi Da Vinci S. ***Resultados*** - Foram realizadas seis colocações de banda gástrica, cinco gastrectomias verticais e 16 septações gástricas com by-pass em Y-de-Roux. Ocorreu uma complicação importante e nenhum óbito. ***Conclusões*** - A via robótica mostrou-se segura durante experiência inicial, propiciando maior facilidade durante o procedimento em pacientes obesos.

DESCRITORES - Obesidade/cirurgia. Robótica. Procedimentos cirúrgicos minimamente invasivos.

INTRODUCTION

The ideal intent of bariatric surgery is to give to the morbidly obese patient significant weight loss in short and long term with minimal post-operative complications.

Minimally invasive techniques were applied to bariatric surgery allowing large reduction in injury to the organs and systems, with reduction in morbidity and recovery time. Also gave a significant improvement in wound of pulmonary complications and reduction in hospital stay[7].

The first application of robotics in bariatric surgery is attributed to Cadiere, which in 1999 installed a gastric band robot-assisted[2]. In 2003 Jacobsen published 107 cases of gastric bypass, operated by 11 different surgeons. In this sample there was no anastomotic gastric leakage. The advantages of this procedure were 3-D vision and the possibility of making a smaller pouch using less stapled sutures due to the easiness of making anastomosis with the robot. In contrast, the surgical time was higher with the robot, in comparison to laparoscopic and laparotomic procedures[3].

Papers are trying to measure the learning curve in robotic bariatric surgery. For this purpose a unit is used in which the surgical time is divided

by body mass index arriving at a result in minute/ BMI. Mohr, in 2005, compared the surgical time of his first robotic gastroplasty with the same operation done by laparoscopy and concluded that robotic surgery was faster (3.8 min/unit BMI versus 5.0, p = 0.009)[5].

In 2005 Dominick Artuso, in New York, conducted a review of 41 robotic gastroplasty performed between 2001 and 2002, compared with laparoscopy. Surgical time was greater with the robot, with no statistical difference in the number of gastrojejunal anastomotic dehiscence[1,6].

The Americans were able to analyze large numbers of patients, thanks to the availability of robotic surgery systems in the country. In 2008, the Huntington Memorial Hospital in Pasadena, published an analysis of 100 cases of by-pass robot-assisted laparoscopy, concluding that the procedure was safe in a community hospital, with results not inferior to laparoscopic gastroplasty in the hands of four experienced surgeons. There are examples of extremely obese patients treated with the use of robotics, as reported in one case of gynecological cancer operated by robot-assisted surgery in a patient with a BMI of 98. This example illustrates the easiness that the robotic system gives in the operation of the obese patients compared to traditional laparoscopy[8].

In European countries the volume of bariatric surgeries performed by robot-assisted is still much lower than in the U.S. The studies are mostly case reports and small series showing the initial experience of some centers, with few cases. One example is the series of the group in Athens, Greece, with an analysis of nine cases operated on between December 2008 and May 2009.

Other techniques by robotics have been studied, such as the gastric band. Horgan in 2004 concluded that the conventional laparoscopic placement was faster for the band, but the robotics had lower morbidity with the same average length of hospital stay. According to the author, the robot facilitated difficult sutures, especially in super-obese patients[6].

The objective of this study was to describe the new access using robot-assisted procedure in bariatric surgery, done by a pioneering team with prior experience in obesity surgery.

METHODS

The surgeries were conducted using Da Vinci S system, in a total of 27 bariatric operations, done by the same surgeon between September 2008 and August 2011 the Syrian-Lebanese Hospital in São Paulo, Brazil. Among the operations, were performed six gastric band placements, five gastrectomies and 16 vertical septations with gastric by-pass in Roux-en-Y. Were evaluated the complications of the technique, wound infection, incisional hernia, reoperations and mortality

RESULTS

Ten men and 17 women were operated. Three vertical gastrectomies were performed in male patients and two in female. Gastric banding were installed in two men and four women. The by-passes were performed on 11 women and five men.

In four patients who underwent gastric bypass and in one sleeve gastrectomy case, hematomas occurred at entry points of portals. None of these patients progressed to surgical wound infection, and none so far had incisional hernia.

Occurred an important complication, the injury of small intestine during the clipping of enteroenteroanastomosis. The lesion was identified on the second day after surgery and treated with laparotomy and bowel resection.

There was no reoperation in this series as well as late complications, till the moment of this publication. No patient died.

DISCUSSION

The robot-assisted bariatric surgery offers advantages, especially to the surgeon. The fact that the operation is done with proper ergonomics and comfortable means brings more tranquility in the realization of the most stressful procedures as obesity surgery, which eventually may have increased duration and bigger physical effort.

The group in question is a pioneer in performing robot-assisted bariatric surgery in Brazil, having performed the first procedures in the country and so far has the largest Brazilian experience in the subject. The first procedure was a gastric by-pass in July 2008.

Is important to say that the complication related was on the stitching line, and occurred in the first procedure. With the robot, the surgical stapling is performed by the auxiliary through common laparoscopic trocar without the use of robot devices. Thus, it can not be considered the dehiscence as a complication of robotic method itself. On the other hand, it shows that the assistant surgeon in robotic surgery has an important role and should be properly trained in advanced laparoscopic procedures, such as stapling gastric by-pass.

What the literature shows is that bariatric surgery has space in robotics, especially in reference hospitals and with well-trained teams. The superiority of robot-assisted abdominal surgery has not been clearly demonstrated, but the literature is growing, including the emergence of telesurgery and distance surgery[1,4].

The initial empirical impression, is that the

robot facilitates the more complicated cases such as operations in super-obese patients. Moreover, it enables the manual gastroenteroanatomosis (using the robotic arm), providing more precision in the procedure. After the learning curve and with trained and certified staff in robotic surgery, surgical procedures can become secure and standardized.

CONCLUSION

The robot-assisted surgery facilitates procedures in obese patients. As initial experience, it can be concluded that the method is safe and should be compared with laparoscopy, which is now more often performed in major centers.

REFERENCES

1. Artuso D, Wayne M, Grossi R. Use of Robotics During Laparoscopic Gastric Bypass for Morbid Obesity. JSLS .2005; 9:266–268
2. Cadiere GB, Himpens J, Vertruyen M, Favretti F. The world's first obesity surgery performed by a surgeon at a distance. Obes surg .1999; 9: 206-209
3. Jacobsen G, Berger R, Horgan S. The role of robotic surgery in morbid obesity. Journal of laparoendoscopic & advanced surgical techniques. 2003; 13(4): 279-283.
4. Joseph Y, Deng MD, Da Vid J, Lourié MD, 100 Robotic-Assisted Laparoscopic Gastric Bypasses at a Community Hospital. The American Surgeon. 2008 ; 74 (10): 1022 – 25
5. Mohr CJ, Nadzam GS, Alami RS, Sanchez BR, Curet MJ. Totally robotic laparoscopic Roux-en-Y Gastric bypass: results from 75 patients. Obesity Surgery. 2006;16(6):690-6.
6. Moser F, Horgan S. Robotically assisted bariatric surgery. American Journal of Surgery. 2004. 188 (4a suppl): 38S-44S.
7. Nguyen NT, Goldman C, Rosenquist CJ, Arango A, Cole CJ, Lee SJ, Wolfe BM. Laparoscopic versus open gastric bypass: a randomized study of outcomes, quality of life, and costs. Ann Surg. 2001; 234(3):279-289.
8. Stone P, Burnett A, Burton B, Roman J. Overcoming extreme obesity with robotic surgery. Int J Med Robotics Comput Assist Surg .2010. Published online in Wiley InterScience (www.interscience.wiley.com). DOI: 10.1002/rcs.341