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Original Article

Endoscopic Breast Surgery Applied To Benign Tumors

Cirurgia Endoscópica de Mama Aplicada a Tumores Benignos

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ABSTRACT

Introduction: Endoscopic Surgery applied to breast tumors, benign and malignant, has recently been analyzed, it seems to have the potential to become an alternative approach with good clinical and aesthetic results. In this report we present a case of breast fibroadenoma and discuss the application of the endoscopic surgery for breast tumor resection. **Methods:** A 22-year-old woman who had a 40 x 40 mm tumor in the lateral region of the right breast. It was diagnosed as a fibroadenoma tumor on the basis of ultrasound and fine-needle aspiration cytology. In the supine position under general anesthesia, a 12 mm skin incision was made below the mid-axillary line. The working space was made with blunt dissection and an insufflation with CO_2 gas pressure of 6 mmHg. Two 5 mm working ports were inserted along the anterior axillary fold two fingerbreadths cranial and caudal to the 12 mm port. Monopolar scissors performed the dissection around the tumor. After the tumor was isolated from all circumferences it was pulled out through the 12 mm port and taken out in two parts. **Results:** The operation time was 195 minutes and the postoperative course was uneventful. The patient was discharged on the second day postoperative. There was no postoperative collection or upper limb symptoms suggesting no injury to axillary structures. The cosmetic outcome was gratifying. **Conclusions:** The endoscopic surgery for benign breast tumors is a safe and technically feasible method to treat large benign tumors and provides cosmetic benefits.

Key Words: Endoscopic Breast Surgery, Breast Tumor, Cosmetic Outcome.

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INTRODUCTION

As a consequence of the proliferation of "minimally invasive" operating techniques endoscopic surgery has been widely used in different surgical specialties and has been applied to breast surgery since the mid-1990's.[1] In 1998, Kitamura and her colleagues[2] reported that with the endoscopic surgery of benign breast tumors they could obtain a more satisfying cosmetic outcome as compared to conventional surgery. More recently endoscopic surgery for malignant breast tumors has been considered; it seems to have the potential to become an alternative approach with good clinical and aesthetic results. [3-8]

Endoscopic breast surgery has not been widely adopted because it was not regarded as less invasive than the conventional surgery and because of several factors including: 1) a steep learning curve related to the challenges posed by the absence of a natural well-contained space, (as in the case of pleural and peritoneal cavities) that in the breast make it difficult to execute intracavitary surgical maneuvers; 2) the time required to carry out the procedure; 3) numerous strategies – without a standard – for the creation of the work space: the ball dissector (used in laparoscopic herniorrhaphy),[2,9] blunt dissection followed by continuous insufflation using carbon dioxide[10] and the video-assisted approach;[3-8] and 4) many breast surgeons were not familiar with the endoscopic procedures.

We describe a new method of endoscopic resection of benign breast lesions by creating a subcutaneous space maintained with continuous insufflation with carbon dioxide through the use of small axillary incisions that provides an anatomically contiguous area for creating access while preserving a scar-free breast. This case report is the first report of endoscopic surgery applied to breast lesions in Latin America.

MATERIALS AND METHODS

A 22-year-old woman was referred to the Surgery Service II of Caracas University Hospital, Central University of Venezuela for assessment of a palpable right breast lump. She had detected the breast lump three years earlier during self-examination and thought it was slowly growing. She complained of mastalgia, but denied nipple discharge, skin changes, or systemic symptoms. She had no personal or family history of breast cancer and had never used the oral contraceptive pill. Clinical examination revealed a tender, mobile 40 x 40 mm solid mass in the lateral region of the right breast. It was diagnosed as a fibroadenoma tumor on the basis of ultrasound and fine-needle aspiration cytology. We obtained her informed consent to perform the endoscopic excision of the tumor.

SURGICAL TECHNIQUE:

The surgeon and the first assistant are placed by the side of the breast to be dissected, with the monitor set above the patient's head. The endoscopic monitoring system is a product of the Olympus Optical Co. The endoscope is rigid and straight, 10 mm in diameter, at 0°. We use conventional laparoscopic tools with a monopolar coagulator.

Patient Positioning: In the supine position under general anesthesia, the upper limb on the operative side is raised and abducted to the patient's head frame, to avoid disturbing the operative maneuver, particularly toward the caudal direction. A roll is placed under the ipsilateral scapular region and the operating table is angled laterally 30°. (Figure 1)

Trocars Placement: A 12 mm skin incision is made below the mid-axillary line, at the nipple level. Through this incision a rigid endoscopic of 0º is introduced and fixed with a purse-string suture. Two 5 mm incisions are made two fingerbreadths cranially and caudally from the 12-mm incision. (Figure 2)

Creating the working space: The subcutaneous space is opened with blunt dissection with a 12 mm bladeless trocar in the avascular plane between the skin of the breast and the anterior surface of the mammary gland at the superior margin of the lesion. The advance toward the breast is guided by palpation of the trocar with the left hand of the surgeon. A CO_2 tube is connected to the port and in the dissected space a constant CO_2 flow is maintained by adjusting the rate of insufflation of the gas so as not to exceed 1.5 liters/minute, at a pressure between 6 and 8 mmHg that maintains the workspace. The 0° rigid scope is inserted and sweeping movements are made with it around the tumor, completing the creation of the working space, while taking care to avoid blood vessels passing through the subcutaneous tissue. 5 mm

Figure 1 *- Patient Positioning.*

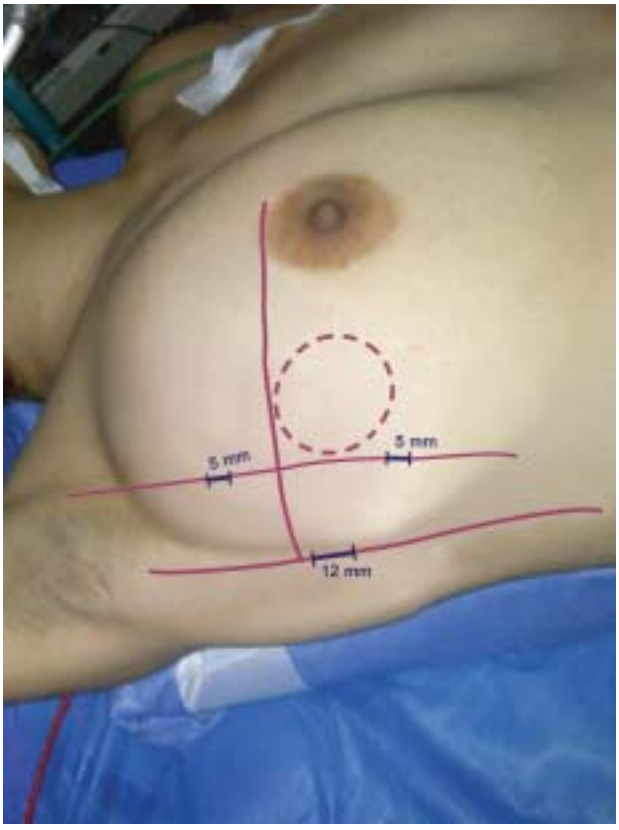

Figure 2 *- Trocar Placement.*

trocars are then introduced in a triangle under endoscopic control. (Figure 3)

Dissection Performed: The dissection is continued around the tumor by using the laparoscopic dissector and laparoscopic monopolar scissor. (Figure 4)

Exteriorization and extraction of the tumor: After the tumor was isolated from all circumferences it was pulled out with a grasper through the 12 mm port and taken out in two parts. A Penrose drain was inserted and left in the dissected cavity.

COSMETIC EVALUATION

The patient was examined four, seven and thirty weeks after surgery. We devised a scoring system for evaluating the cosmetic outcome with 5 items (ABNSW)[8]. The five items are: asymmetry (A), breast shape (B), nipple shape (N), skin condition (S) and wound scar (W). Each item is scored on a 0 to 3 scale: 0: poor, 1: fair, 2: good, 3: excellent. These 5 item scores are then totaled, with a maximum ABNSW score of 15. Results were defined as follows: 15: excellent; 11-14: good; 6-10: fair; 5 or less: poor.

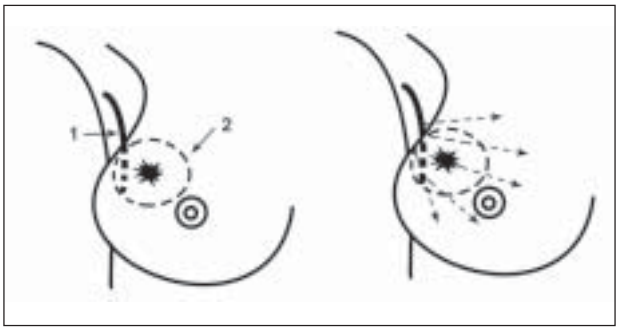

Figure 3 *- Creating the Working Space. 1. Midaxillary Incision. 2. Tumor.*

Figure 4 *- Dissection Performed. Endoscopic View.*

RESULTS

The operative time was 195 minutes. The postoperative course was uneventful. The patient was discharged on the second day postoperative. There was no postoperative fluid collection or upper limb symptoms suggestive of injury to axillary structures. The cosmetic outcomes were subjectively satisfying. The ABNSW score was 14, defined as very good. The pathological report was Fibroadenoma.

DISCUSSION

Benign breast masses can be followed periodically, but some factors – such as palpable mass, pain, growth and peace of mind – may lead patients to choose removal. Surgical resection has been the standard of care, with an incision made directly in the breast where the tumor is located or by circumareolar incision. Both often yield unsatisfactory aesthetic results, which is why several non-surgical options have been developed including vacuum-assisted biopsy,[11,12] radiofrequency ablation,[13,14] laser therapy,[15] and cryotherapy,[16,17] each with its own limitations.

Women have concerns about the cosmetic outcomes of benign breast tumor resections.[18] The use of endoscopic breast surgery, although still invasive, moves the surgical wound to a less conspicuous site, like the axilla.

Endoscopic surgery of the breast was reported in the early 1990s in plastic surgery[19] and has been employed since as a method for excision of benign and malignant breast tumors with good aesthetic and clinical outcomes. The endoscopic resection of benign tumors could be performed via the retromammary space and it was the most reported access.

We have described the blunt dissection technique – called the subcutaneous tunneling method – we use to create the workspace, separating the breast skin from the mammary gland tissue.[20] The transaxillary approach provides easy access. We work around the tumor in an avascular plane. This technique reduces surgical scarring, has excellent cosmetic results, and was well accepted by the patient. Although it is a time-consuming, the procedure can

be used in women with peripherally located tumors up to 4 centimeters or in women with multiple tumors where general anesthesia is justified. Further research must be done. Application of this technique in early stage breast cancer can also be considered and warrants further study.

RESUMO

Introdução: Cirurgia endoscópica aplicada aos tumores de mama, benignos e malignos, foi recentemente revisada e parece ter potencial para se tornar uma alternativa, com bons resultados clínicos e estéticos. Neste trabalho apresentamos um caso de fibroadenoma de mama e discutimos a aplicação da cirurgia endoscópica para ressecção de tumor de mama. **Métodos**: Mulher de 22 anos que apresntava um tumor de 40 x 40 mm na região lateral da mama direita. Foi diagnosticado como um fibroadenoma com base na ultrassonografia e na citologia aspirativa por agulha fina. Na posição supina, sob anestesia geral, uma incisão na pele foi feita 12 milímetros abaixo da linha axilar média. O espaço de trabalho foi criado com dissecção romba e por uma insuflação do CO2 com pressão de 6 mmHg. Dois portais de 5 milímetros foram inseridos ao longo da linha axilar anterior, dois dedos cranial e caudal ao portal de 12 mm. Tesoura monopolar foi usada na dissecção de todo o tumor. Depois que o tumor foi todo isolado, o mesmo foi puxado para fora através do portal de 12 mm e retirado em duas partes. **Resultados**: O tempo de operação foi de 195 minutos e o pós-operatório transcorreu sem intercorrências. A paciente recebeu alta no segundo dia pós-operatório. Não houve seroma ou sintomas do membro superior no pós-operatório, sugerindo que não houve danos às estruturas axilares. O resultado estético foi gratificante. **Conclusões**: A cirurgia endoscópica para tumores de mama é um método seguro e tecnicamente viável para tratar tumores benignos e proporciona benefícios cosméticos.

Palavras-chave: Cirurgia endoscópica da mama, tumor de mama, resultados estéticos.

REFERENCES

1. Aponte-Rueda ME, Saade Cárdenas RA, Saade Aure MJ. Endoscopic axillary dissection: a systematic review of the literature. Breast 2009; 18(3):15.
2. Kitamura K, Inoue H, Ishida M, Kinoshita J, Hashizume M, Sugimachi K. Endoscopic extirpation of benign breast tumors using an extramammary approach. Am J Surg 2001; 181:211-214.
3. Ho WS, Ying SY, Chan ACW. Endoscopic-assisted subcutaneous mastectomy and axillary dissection with immediate mammary prosthesis reconstruction for early breast cancer. Surg Endosc 2002; 16:302-306.
4. Lee EK, Kook SH, Park YL, Bae WG. Endoscopy-assisted Breast-Conserving Surgery for early Breast Cancer. World J Surg 2006; 30:957-964.
5. Yamashita K, Shimizu K. Trans-axillary retro-mammary gland route approach of video-assisted breast surgery a perform breast conserving surgery for cancer even in inner side of the breast. Chin Med J 2008; 121(20):1960-1964.
6. Fan LJ, Jiang J, Yang X, Zhang Y, Li X, Chen X, Zhong L. A prospective study comparing endoscopic subcutaneous mastectomy plus immediate reconstruction with implants and breast conserving surgery for breast cancer. Chin Med J 2009; 122(24);2945-2950.
7. Nakajima H, Fuji I, Mizuta N, Sakaguchi K, Hachimine Y, Magae J. Video-assisted Skin-Sparing Breast-Conserving Surgery for Breast cancer and Immediate Reconstruction with Autologous Tissue: Clinical Outcomes. Ann Surg Oncol 2009; 16:1982-1989.
8. Yamashita K, Shimizu K. Video-Assisted Breast Surgery: Reconstruction after Resection of More than 33% of the Breast. J Nippon Med Sch 2006; 73(6):320-327.
9. Hsien L, Huang CK, Yu P, Chen H, Hsieh P, Hung K et al. Retromammary approach for Endoscopic Resection of Benign Breast Lesions. World J Surg 2009; 33(12):2572-8.
10. Agarwal B, Agarwal S, Gupta M, Mahajan K. Transaxillary endoscopic excision of benign lumps: a new technioque. Surg Endosc 2008; 407-410.
11. Parker SH, Klaus AJ, Mc Wey PJ, Schilling K, Cupples TE, Duchesne N, et al. Sonographically guided directional vacuum-assisted breast biopsy using a handheld device. AJR Am J Roentgenol 2001; 177:405-408.
12. March DE, Coughlin BF, Barham RB, Robert A. Goulart, Stephen V. Klein, et al Breast masses: removal of all US evidence during biopsy by using a handheld vacuum-assisted device—initial experience. Radiology 2003; 227:549-555.
13. Izzo F, Thomas R, Delrio P, Rinaldo M, Vallone P, DeChiara A, et al. Radiofrequency ablation in patients with primary breast carcinoma: a pilot study in 26 patients. Cancer 2001; 92:2036- 2044.
14. Singletary SE, Fornage BD, Sneige N, Ross M, Simmons R, Giuliano A et al. Radiofrequency ablation of early-stage invasive breast tumors: an overview. Cancer J 2002; 8:177-180.

15. Dowlatshahi K, Francescatti DS, Bloom KJ. Laser therapy for small breast cancers. Am J Surg 2002; 184:359-363.
16. Staren ED, Sabel MS, Gianakakis LM, Wiener GA, Hart V, Gorski M et al. Cryosurgery of breast cancer. Arch Surg 1997; 132:28-33.
17. Pfleiderer SO, Freesmeyer MG, Marx C, Kuhne-Heid R, Schneider A, Kaiser WA. Cryotherapy of breast cancer under ultrasound guidance: initial results and limitations. Eur Radiol 2002; 12:3009-3014.
18. Klassen AF, Pusic AL, Scott A, Klok J, Cano SJ. Satisfaction and quality of life in women who undergo breast surgery: A qualitative study. BMC Women's Health 2009; 9:11.
19. Kompatsher P. Endoscopic capsulotomy of capsular contracture after breast augmentation: a very Challenger therapeutic approach. Plast Reconstr Surg 1992; 90:1125-1126.
20. Tamaki Y, Sakita I, Miyoshi Y, Sekimoto M, Takiguchi S, Monden M et al. Transareolar endoscoy-assited partial mastectomy: a preliminary report of six cases. Surg Laparosc Endosc Percutan Tech 2001; 11:356-62.

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