The Journal of
OBSTETRICS AND GYNECOLOGY of India

J Obstet Gynecol India Vol. 59, No. 3 : May/June 2009 pg 239-241

Original Article

Our experience with the Sheth's pneumo-surgical pack

Bhatt Rohit [1], Sheriar Nozer [2], Krishna Usha [2]

[1] Chief, [2] Honorary ,

[1] Depart. of Ob.& Gyn., B.D. Amin General Hospital, Baroda, Gujarat, India, [2]Honorary Obstetrician & Gynecologist

Abstract

Objectives: To evaluate the effectiveness and safety of the recently described Sheth's pnuemo-surgical pack when used for a variety of gynecological surgeries. *Methods:* The pack available in three sizes (3, 6 and 12 inches) was utilized by 11 gynecological surgeons in 62 cases of abdominal, vaginal and laparoscopic surgeries over 12 months. *Results:* The pneumo-surgical pack was effective in maintaining a clear surgical field and was safe and easy to use. It was assessed by the surgeons and reported as being very useful in 35 cases, useful in 22 cases and of no particular advantage in 5 cases. *Conclusion:* The pneumo-surgical pack is a potentially useful adjunct to a variety of gynecological surgeries. It has the benefit for being easy to use and atraumatic, while reducing the risk and complications associated with conventional techniques.

Key words: gynecological surgery, hysterectomy, sponge, gauze, roller pack

Introduction

A safe and clear surgical field is one of the most important requirements of any surgical procedure. This is particularly true in all abdominal surgeries where the mobility of the intestine and the omentum can interfere with the surgical field and making retraction difficult, even more so in the presence of obesity. For gynecologists, pelvic surgery poses its own inherent challenges to access, both due to a limitation of space and the contemporary shift to performing most pelvic surgeries thorough relatively smaller transverse incisions.

Paper received on 11/03/2008 ; accepted on 30/01/2009

Correspondence :
Dr.Bhatt Rohit
Department of Obstetrics and Gynecology
BD Amin General Hosital,
Baroda, Gujarat, India
Email : gabt@satyam.net.in

The use of multiple surgical sponges (alternately roller packs) has been the widely used traditional technique to achieve and maintain a clear surgical field. However with these and more so with the undesirable gauze pieces carelessly used, often without adequate radio opaque marking for identification and retrieval, there is a risk of foreign body retention due to human error with serious medical complications and legal consequences.

Traditional materials used for packing tend to be abrasive. Animal experiments have shown that it is the abrasive effect of introducing the conventional sponge that produces the mesothelial trauma. This acts as the stimulus for an inflammatory response, followed by the adherence of adjacent involved peritoneal surface [1].

It is to address these potentially dangerous shortcomings that Prof. Shirish Sheth devised a novel pneumo-pack. The uniquely simple design combines the diffuse uniform retraction using pneumatic pressure with the connection to the external insufflating bulb by

a long tube which preempts accidental displacement and retention, designed to make the time honored sponge count irrelevant. A preliminary report of the use of the pneumo-pack in 10 cases by Prof. Sheth prompted us to evaluate this promising device in a prospective multicentric scientific study [2].

Methods

The study was conducted prospectively from March 2005 to February 2006. The data were collected in a standardized format and provided to the participating surgeons. The 11 gynecological surgeons included the eight listed in the acknowledgements and the three authors. The pneumo-pack was used in 62 cases, which included 47 abdominal, 5 vaginal and 10 laparoscopic surgeries.

Technical specifications

The pneumo-pack consists of a two layered rectangular, inflatable and leak proof silicone bag. It has a long tube arising from its lowest part and connected to a manual pressure bulb for inflating the bag. It is available in three sizes as per the size of the bag (Figure 1) small three inches, medium six inches and large 12 inches. The pneumo-pack is pre-sterilized with ethylene oxide gas and available in sterile packing. While the pneumo-pack could be reused after fresh sterilization (as has been done in a few other cases by using ETO sterilization), in this reported series the pack was disposed after a single use.

Fig. 1. Rectangular inflatable & leak proof silicone bag

Details of surgical procedure

At laparotomy the pneumo-pack was introduced after the parietal peritoneum was opened. After manually displacing the intestines upwards the deflated pack of suitable size (large 12 inches pack in 27 cases and medium six inches pack in 20 cases) was selected and then placed horizontally in the caudal position. The pack was gently inflated with air using the external bulb so as to ensure an adequately clear operative field as per the individual requirement of each surgery and individual surgeons. The packs were used at a variety of procedures such as abdominal hysterectomy, myomectomy and tubal reconstructive surgery. The packs easily retained their positioning below the omentum and intestinal loops by the pneumatic distension with air. At the completion of surgery, the pneumo-pack was deflated by opening the valve at the base of the bulb and then carefully removed.

The smaller three inches pack was used vaginally at five vaginal and 10 laparoscopic surgeries (Table 1). At vaginal hysterectomy it was used to optimize visualization when performing a salpingectomy and an oophorectomy. At laparoscopic hysterectomy it was used after delivering the detached uterine specimen to occlude the vagina and create and airtight seal to allow recreation of the pneumoperitoneum to allow an inspection of the pedicles and the vaginal edge to confirm or achieve hemostasis. In a few cases the clearly visualized vaginal edge had small bleeding vessels coagulated using bipolar coagulation under clear vision.

Table 1. Range of pneumo-packs used according to the size (length) of pack. The small size packs were all used vaginally either at vaginal or laparoscopic hysterectomy.

Sizes of packs used	Number
Large size – 12”	27
Medium size – 6”	20
Small size - 3”	15
Total number used	62

Table 2. Subjective evaluation of usefulness of pneumo-pack by the participating surgeon documented immediately after each case.

Evaluation by surgeons	Number
Very useful	40
Useful	17
Not particularly useful	5
Total number evaluated	62

Results

The insertion and placement of the pneumo-pack at laparotomy was reported to be easy in all the cases. The pneumo-pack was easily inflated and the distension retained throughout surgery in all the cases. At the completion of surgery the pack was easily removed.

While the pneumo-pack did not offer any significant advantage in routine vaginal hysterectomy, it had great value if the tubes and the ovaries were to be visualized or removed. The application at total laparoscopic hysterectomy is reported for the first time and could replace the need for packing the vaginal canal with a surgical sponge.

A subjective assessment of the perceived benefit was sought from each surgeon for every case. The pneumo-pack was reported to be very useful in 40 cases, useful in 17 cases and as having no particular advantage in five cases (Table 2).

An occasional area of concern was the lateral displacement of the inflated pack and the occasional disconnection of the inflation tube during removal. In 12 cases the inflated pack slipped to one side during the course of surgery and needed repositioning. Though traction on the tubing resulted in its disconnection from the bulb in 4 cases, there was no difficulty in identification, retrieval and removal. Hence neither of these problems was considered significant, since both could be easily rectified. A lack of the absorptive capacity of conventional sponges could be considered a disadvantage only if the purpose was to mop up blood and fluids contaminating the surgical field. Since the dedicated purpose of the pneumo-pack was retraction this should not be considered a detriment. On the contrary, aspiration of blood and fluid from beside the retaining wall created by the pack allows a more accurate measurement in the suction bottle of blood lost or fluid aspirated.

Discussion

Intraperitoneal forgotten foreign bodies are known to create adhesions, to encapsulate or provoke an exudative response, with or without accompanying bacterial infection. Often a process of self-extrusion is initiated. This is also true for gossypibomas, retained surgical sponges. Presentation is possible as a pseudotumoral, occlusive or septic syndrome, though there are cases that have remained asymptomatic for long periods. Therapy consists of repeat surgery and an operative removal of the foreign body[3].

The Sheth's pneumo-pack is a simple, yet novel innovation. It has the potential of preempting all the disadvantages and complications associated with conventional packs, mops and sponges. It is simple to use with few disadvantages, most of which could be rectified by slight modification in the structure, manufacturing process or the use of the pneumo-pack. In the course of the evaluation, suggestions were received from participating surgeons to change the shape to an oval shape with smooth edges, the inclusion of a groove or interruption on the wider surface to prevent shifting and slippage, the use of softer plastic material and to consider the possibility of developing an absorptive coating on the pack to avoid the intraperitoneal collection of fluid.

Observations by individual surgeons also reported unexpected, innovative benefits. The packs were used in a potential hemostatic role to apply pressure over a large raw area. They were also used to lift out an enlarged uterus (and by the same possible mechanism mobile adnexal masses) from the peritoneal cavity by distending a pack slipped behind the uterus. While the use of the pneumo-pack is not a necessity in routine vaginal hysterectomy, it offers definite benefit if the ovaries are to be visualized or removed. Sheth (personal communication) has used the small pneumo-pack in such 40 cases for performing a prophylactic oophorectomy after vaginal hysterectomy[4].

Conclusion

The pneumo-surgical pack promises to be a useful surgical adjunct and an innovation to assist conventional gynecological surgery. Its use is simple and effective in achieving its purpose, while adding a modicum of safety since the dreaded inadvertent retention of a foreign body is practically impossible.

Acknowledgements

The authors are grateful to Prof. Shirish Sheth for providing the pneumo surgical packs for this study and acknowledge the contribution of Nalini Bhanot, Avan Dadina, Atul Ganatra, Sonia Golani, Maya Hazra, Padma Iyengar, Monika Jani and Vandana Patel to this prospective study and their valuable objective and subjective inputs.

References

1. Down RH, Whitehead R, Watts JM. Why do surgical packs cause adhesions? *Aust N Z J Surg 1980;50:83-5.*
2. Sheth SS. Pneumo-surgical pack – a preliminary report. *Int J Gynaecol Obstet 2003;81:213-5.*
3. Lauwers PR, Van Hee RH. Intraperitoneal gossypibomas: the need to count sponges. *World J Surg 2000;24:521-7.*
4. Sheth SS. Personal communication 2007.