The use of thumbtacks to stop severe presacral bleeding

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Summary

Massive presacral bleeding arising during gynaecological surgery can be sudden, rapid and life-threatening. Further, its control and management can be challenging, since standard measures are frequently ineffective. The use of thumbtacks to control severe presacral venous haemorrhage was first reported in 1985. Despite this, it does not appear to be widely known or used in gynaecological surgery. A case is presented in which the technique was used, and the literature on its use is reviewed.

Key words: Presacral bleeding; Thumbtack; Drawing pin; Haemorrhage.

Introduction

Bleeding from the presacral veins tends to be profuse and vigorous because the inferior vena cava, presacral veins and the internal vertebral venous system act as a large venous 'blood pool' in the pelvis because of the lack of functional valves [1]. Conventional haemostatic techniques, such as suture ligation, haemoclips, cauterisation, packing, and use of microfibrillar collagen or absorbable gelatine sponges, may be ineffective.

The use of thumbtacks was first reported in 1985 [2]. Despite this, and several subsequent reports of success with the technique [3-13], it does not appear to be widely known among surgeons [14]. We report here a case in which standard stationery drawing pins (thumbtacks) were successfully used to control severe presacral bleeding, and review the literature on the technique.

Case Report

A 65-year-old woman, gravida 11, para 10, abortus 1, was operated on for squamous cell cervical carcinoma International Federation of Obstetrics and Gynecology (FIGO) Stage IB1 in May 2000. A class III hysterectomy with bilateral pelvic and paraaortic lymphadenectomy was performed. During the lymph node dissection, severe massive presacral bleeding occurred. Pressing a finger against the sacrum, direct pressure with gauze swabs, hot packs, suture ligation and cauterisation of the presacral fascia proved futile. Bonewax was not available. While these interventions were being attempted, ordinary stationery drawing pins were sterilized with 3.4% alkaline glutaraldehyde solution (Cidex Plus®, Johnson and Johnson, Ethicon, Inc., USA) for 20 minutes. Six of these were used to occlude the bleeding, which stopped immediately. Postoperative X-ray confirmed that they were securely in place. The patient's postoperative course was uneventful and, four years later, the drawing pins are still in place (Figure 1). There have been no complications and the CT scan shows normal findings (Figure 2).

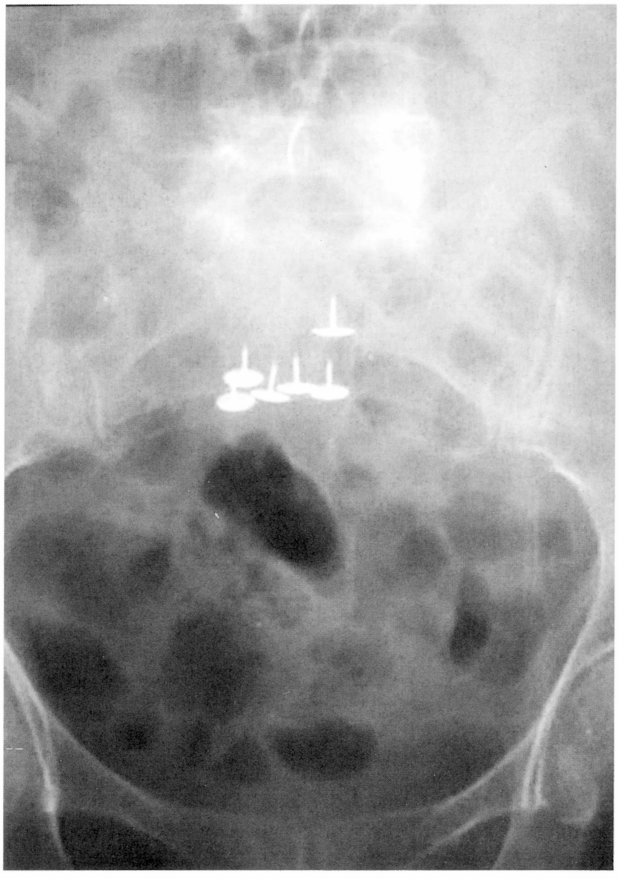

Figure 1. — Anterior-posterior X-ray of the pelvis showing drawing pins securely in place four years after placement.

Discussion

Massive presacral haemorrhage is uncommon but has been reported in many forms of gynaecological surgery, including presacral neurectomy [5], abdominal sacrocolpopexy [6], cytoreductive surgery and pelvic lymphadenectomy in patients with gynaecologic malignancies [12]. The use of conventional methods such as ligatures, clips or electrocautery to control presacral haemorrhage is

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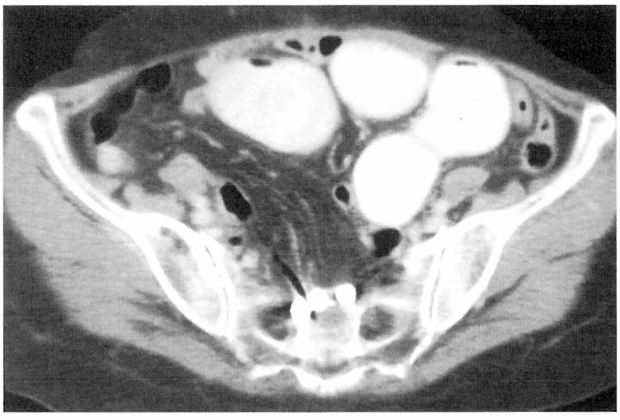

Figure 2. — CT scan showing normal findings.

often futile and may lead to further damage and increase haemorrhage [4, 15]. Packing is also often unsuccessful, will usually require reoperation for removal and introduces a further risk of infection [11].

In 1985, Wang *et al.* [2] clarified the anatomic features of the vertebral venous system and its close relationship with severe presacral haemorrhage and described the use of sterilised metallic drawing pins as a simple measure for controlling this haemorrhage.

Since this time, there have been several reports of its successful use [3-13]. Most of these involved sterilised stainless steel thumbtacks but Nivatongs *et al.* [3] used titanium. In most cases, the thumbtack was a last desperate measure after everything else had been tried. For example, Thiel *et al.* [12] had unsuccessfully tried sutures, metal clips, cautery, bone wax and packing.

Many of the reports indicated that the sterile thumbtack was now, or would henceforth be, the standard method of controlling severe presacral bleeding in the reporting institution, though Khan *et al.* [4] recommended the use of haemostatic agents plus laparotomy sponges for compression, with the metallic thumbtack for backup if this failed.

Lucarotti *et al.* [10] varied the technique slightly by pushing the sterilised metallic drawing pin through the synthetic coagulant Surgicel® (Johnson and Johnson, Ethicon, Inc., USA) into the bleeding point and then into the sacrum, while Gostout *et al.* [11] similarly used a single or double sheet of tailored gelatine sponge Gelfoam® (Pharmacia & Upjohn Company, USA).

Stolfi *et al.* [16] designed special titanium occluder pins for the purpose but these do not seem to have caught on and may be an unnecessary refinement.

Dislodgement has been reported in the forensic [17], but not the gynaecological, literature, in which we could find no reports of complications. Nonetheless, it would be wise to heed the warning of Suh *et al.* [17] that surgeons and pathologists should use caution when exploring pelvic or abdominal cavities following pelvic vascular trauma in which the thumbtack technique has been used.

Some surgeons have reported difficulty in the manual placement of thumbtacks, and Timmons *et al.* [6] described an instrument which they had devised to assist placement.

Conclusion

Use of standard size drawing pins (thumbtacks) sterilised and deployed as described in the case report is a simple, effective, readily available and potentially life-saving technique in severe presacral bleeding. Though there must always be some misgivings about leaving a foreign body inside the patient, from the point of view of possible toxic effect or foreign body reaction, these fears do not seem to have been realised. Neither do concerns that they could possibly function as a nidus of infection.

Dislodgement has been described in the forensic literature but not, as far as we could establish, in the gynaecological literature. It is, therefore, probably a rare event, but post-operative X-rays should be taken to ensure the pins are embedded in place.

Our feeling is that the drawing pin technique should be considered in any episode of severe presacral bleeding which cannot be controlled by simple methods involving direct pressure. As in our case, the use of several pins may be necessary.

Where the bleeding area is too large to be controlled in this manner, muscle fragment welding may be the appropriate intervention [11, 18-20].

References

[1] Braley S.C., Schneider P.D., Bold R.J., Goodnight J.E. Jr., Khatri V.P.: "Controlled tamponade of severe presacral venous hemorrhage; use of a breast implant sizer". *Dis. Colon Rectum.,* 2002, *45,* 140.

[2] Wang Q.Y., Shi W.J., Zhao Y.R., Zhou W.Q., He Z.R.: "New concepts in severe presacral hemorrhage during proctectomy". *Arch. Surg.,* 1985, *120,* 1013.

[3] Nivatvongs S., Fang D.T.: "The use of thumbtacks to stop massive presacral hemorrhage". *Dis. Colon Rectum.,* 1986, *29,* 589.

[4] Khan F.A., Fang D.T., Nivatvongs S.: "Management of presacral bleeding during rectal resection". *Surg. Gynecol. Obstet.*, 1987, *165,* 274.

[5] Patsner B., Orr J.W. Jr.: "Intractable venous sacral hemorrhage: use of stainless steel thumbtacks to obtain hemostasis". *Am. J. Obstet. Gynecol.*, 1990, *162,* 452.

[6] Timmons M.C., Kohler M.F., Addison W.A.: "Thumbtack use for control of presacral bleeding, with description of an instrument for thumbtack application". *Obstet Gynecol.*, 1991, *78,* 313.

[7] Barras J.P., Fellmann T.: "Massive hemorrhage from presacral veins during resection of the rectum". *Helv. Chir Acta.*, 1992, *59,* 335.

[8] Sundaresan K.T., Sugirtha S., Devanarayana N.M., Ariyaratne M.H., Deen K.I.: "Prevention of presacral haemorrhage using thumb tacks". *Ceylon Med J.,* 1999, *44,* 87.

[9] Arnaud J.P., Tuech J.J., Pessaux P.: "Management of presacral venous bleeding with the use of thumbtacks". *Dig. Surg.,* 2000, *17,* 651.

[10] Lucarotti M.E., Armstrong C.P., Bartolo D.C.: "Control of presacral bleeding in rectal surgery". *Ann. R. Coll. Surg. Engl.*, 1991, *73,* 289.

[11] Gostout B.S., Cliby W.A., Podratz K.C.: "Prevention and management of acute intraoperative bleeding". *Clin. Obstet. Gynecol.*, 2002, *45,* 481.

[12] Thiel I., Lang P.F.J., Tamussino K.F., Winter R.: "Thumbtack application for control of presacral hemorrhage at pelvic lymphadenectomy: a case report". *J. Pelvic Surg.,* 2001, *7,* 303.

[13] Rotondano G., Romano G.: "The use of thumbtacks in massive presacral bleeding". *Am. J. Gastroenterol.*, 2000, *95,* 1102.

[14] Yarze J.C.: "A 'tacky' situation". *Am. J. Gastroenterol.*, 1999, *94,* 1984.

[15] McPartland K.J., Hyman N.H.: "Damage control: what is its role in colorectal surgery?". *Dis. Colon Rectum.*, 2003, *46,* 981.
[16] Stolfi V.M., Milsom J.W., Lavery I.C., Oakley J.R., Church J.M., Fazio V.W.: "Newly designed occluder pin for presacral hemorrhage". *Dis. Colon Rectum.,* 1992, *35,* 166.
[17] Suh M., Shaikh J.R., Dixon A.M., Smialek J.E.: "Failure of thumbtacks used in control of presacral hemorrhage". *Am. J. Forensic Med. Pathol.,* 1992, *13,* 324.
[18] Remzi F.H., Oncel M., Fazio V.W.: "Muscle tamponade to control presacral venous bleeding: report of two cases". *Dis. Colon Rectum.,* 2002, *45,* 1109.
[19] Ayuste E. Jr., Roxas M.F.: "Validating the use of rectus muscle fragment welding to control presacral bleeding during rectal mobilization". *Asian. J. Surg.,* 2004, *27,* 18.
[20] Harrison J.L., Hooks V.H., Pearl R.K., Cheape J.D., Lawrence M.A., Orsay C.P. *et al.*: "Muscle fragment welding for control of massive presacral bleeding during rectal mobilization: a review of eight cases". *Dis. Colon Rectum.*, 2003, *46,* 1115.

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