

The Use of Ligating Clips (Liga Clips®) to Control Massive Presacral Venous Bleeding: Case Reports

Paiboon Jivapaisarnpong, MD

Division of Colorectal Surgery, Department of Surgery, Rajavithi Hospital, Bangkok, 10400, Thailand

Abstract

Background: Massive presacral venous bleeding is a serious complication that the hemostatic methods commonly performed may be ineffective. The author presents the use of the ligating clips, another method, in controlling massive presacral venous bleeding in failure cases from many hemostatic methods.

Method: During the 5 year period of 2001-2005, there were 142 pelvic surgical cases. Most of them were malignancy and the common procedure performed was low anterior resection. There were 3 cases of massive presacral venous bleeding that could not be controlled by conventional hemostatic methods. These cases were recurrence cancer of rectum, advanced rectal cancer with liver cirrhosis and huge retrorectal tumor.

Result: There were 3 patients who failed from previous operation in attempt to control bleeding by electric cautery, argon plasma coagulator, muscle welding technique and finally pelvic packing. All of them were successfully controlled by ligating clip. There were no postoperative bleedings or infections, and no further blood transfusion was needed.

Conclusion: Ligating clips, a basic instrument available in all hospitals, is effective in controlling massive presacral venous bleeding.

Keywords: Ligating clips, Liga clips®, vascular clip, massive presacral venous bleeding, pelvic packing

The use of ligating clips (Liga clips®) to control massive presacral venous bleeding

The incidence of massive presacral venous bleeding is low¹ but such bleeding is severe^{2,3} and even fatal. Among several hemostatic methods reported such as diathermy, thumb tacks^{4,6}, inflatable devices⁷⁻¹⁰, pelvic packing¹¹, muscle fragment welding¹²⁻¹⁴, application of bone wax¹⁵ and cyanoacrylate tissue adhesives¹⁶, the thumb tack is commonly used to control hemorrhage. However, it is not available in most hospitals. Additionally, in some cases the bleeding is so profuse that the exact bleeding site cannot be identified and

controlled by conventional hemostatic methods. The author reported the use of vascular clips to control massive presacral venous bleeding.

PATIENTS AND METHODS

During the 5 year period of 2001-2005, there were 142 pelvic surgical cases performed by the author. Most of the cases were malignancy (Table 1). The commonest surgical procedure performed was the low anterior resection. Among these, 4 cases had massive presacral venous bleeding. The conventional

Correspondence address : Paiboon Jivapaisarnpong, MD, Division of Colorectal Surgery, Department of Surgery, Rajavithi Hospital, Rajavithi Road, Rajathevi, Bangkok, 10400, Thailand, Telephone: 66-2-3548080, Fax: 66-2-3548080; E-mail: paiboon_jiva@yahoo.co.th

Table 1 Details of pelvic surgical cases

Total	142 cases
Malignant lesion	135 cases
Benign lesion	7 cases
Operation performed	
Low anterior resection	93 cases
AP resection	32 cases
TPC with IPAA	9 cases
Resection of tumor mass	8 cases
(Reoperation for recurrent cancer in pelvis 16 cases)	

TPC with IPAA = total proctocolectomy with ileal pouch - anal anastomosis

hemostatic methods adopted were electrocoagulation, argon plasma coagulation, muscle welding technique and pelvic packing. Only one case was successfully controlled by pelvic packing and thereby excluded from the study. The remaining 3 cases eventually applied vascular clips to control bleedings. These cases were a recurrent cancer of rectum in a 75-year-old patient, an advanced rectal cancer (invading sacrum) in a 52-year-old cirrhotic patient and a huge retrorectal tumor in a 38-year-old patient.

Definition

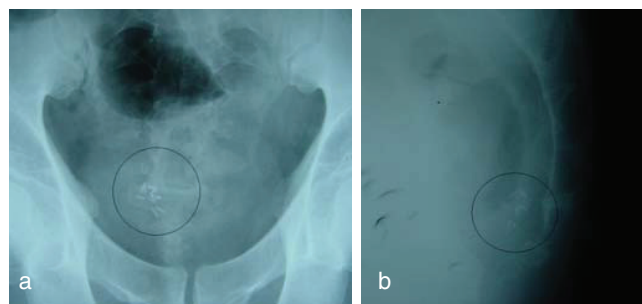
The massive presacral venous bleeding was defined as bleeding more than 2,000 ml. from presacral venous plexus.

Surgical Technique

The bleeding site was initially controlled by pressure using swab or gauze. Vascular clips (Liga clips®) were applied to the venous vessels situated distal to the pressure site (bleeding site). Additional vascular clips were then applied to both lateral sides. After the swab or gauze was removed, the vascular clips were applied to the proximal part of venous plexus. Subsequently, the vascular clips were applied around the bleeding area until bleeding stopped or slowed down and additional vascular clips would be applied to control the bleeding completely (Figure 1 and 2).

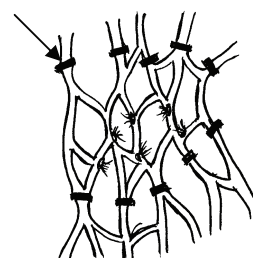
RESULTS

All of the massive bleeding cases were patients with large masses in pelvic cavity that needed blunt dissection to remove the tumor mass. This led to a tear of the presacral fascia and presacral venous plexus that caused massive presacral venous bleeding. There were

**Figure 1** X-ray film with vascular clips in

- a. AP view
b. lateral view

Vascular clip

**Figure 2** The diagram of presacral venous plexus with vascular clips in place

3 cases where bleeding could not be controlled by conventional hemostatic methods. The first two cases needed pelvic packing due to massive bleeding and poor general condition during the first operation. The second operative attempt were performed 2 days later in order to remove pelvic packing, but there were ongoing bleeding that could not be controlled by conventional hemostatic methods. Therefore, the ligating clips were applied and resulted in successful control of the bleeding. The third case also had uncontrolled bleeding in spite of adopting the conventional hemostatic methods and was successfully controlled by ligating clips in the first operative attempt (Table 2). There were no postoperative bleedings or infections, and the patients needed no further blood transfusion. The second case died 3 weeks later from hepatic failure.

DISCUSSION

Massive presacral venous bleeding is rare if surgeons perform sharp dissection technique in a correct plane under direct vision. However, it may

Table 2 Details of blood loss and operative time

Patient	1st operation		2nd operation	
	blood loss (ml.)	operative time (hour.minute)	blood loss (ml.)	operative time (hour.minute)
1	4,200	3.50	3,300	2.15
2	2,600	4.05	800	1.50
3	2,200	4.15	-	-

occur in a case of large pelvic mass, advanced cancer or recurrent cancer^{2,3}. The large pelvic mass occupying most of the pelvic cavity that could not be removed by sharp dissection under direct vision was rather better removed by blunt dissection due to the fact that these recurrent or advanced cancers usually invade or adhere firmly to adjacent tissues in pelvic cavity and dissection would undoubtedly cause tearing of the pelvic fascia. Also presacral venous plexus may be injured and possibly attain multiple tears that result in massive bleeding.

Although the electrocautery is the instrument familiar to many surgeons, it is not effective in controlling such bleeding and adversely causes more venous injuries. Thumb tack, on the other hand, is a very effective technique to stop such bleeding but it is unavailable in many hospitals⁴⁻⁶. Muscle welding technique is a newer and popular method in controlling presacral venous bleeding. But the muscle welding technique may not work properly in case of profuse bleeding (like a flood) from multiple tears of presacral venous plexus that bleeding sites cannot be identified¹²⁻¹⁴. Pelvic packing is ineffective in most of the cases (only 33% or 1 in 3 cases of this report). The exposed presacral venous plexus from tearing pelvic fascia may cause further tearing of venous plexus during controlling procedure. This type of bleeding will be a factor that interferes with effectiveness in hemostatic methods commonly used.

Vascular clip is a hemostatic instrument that most surgeons are familiar with. Currently it is rarely used because of the availability of the newer techniques that are simple and effective for controlling presacral venous bleeding described early. This report shows that it can be used to control massive bleeding especially in the case of torn presacral fascia with exposed presacral venous plexus. The clips can be applied directly to each vein of the plexus and effectively maintain hemostasis. These patients had stable vital signs

postoperatively and needed no further blood transfusion.

CONCLUSION

Massive presacral venous bleeding is a serious complication that requires surgical hemostatic methods. Various alternative methods are available to surgeons in the management of this emergency situation. Ligating clips, a basic instrument which is available in most hospitals and is familiar to most surgeons might be one of the effective hemostatic techniques.

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