

OPERATIVE SKILL

Internal Iliac Artery Ligation (IIAL): An Uterus/Life Saving Procedure

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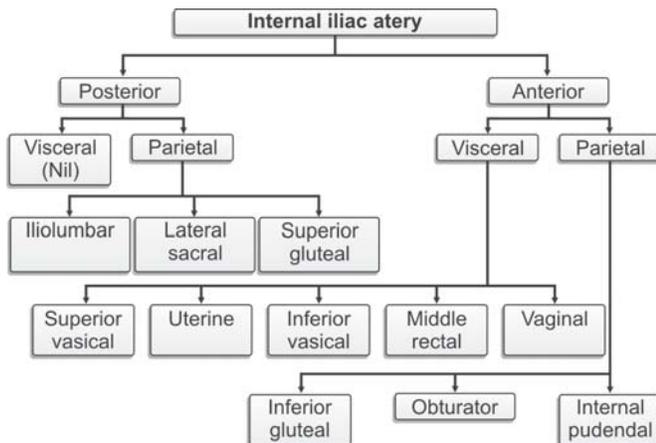
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INTRODUCTION

Obstetrics is bloody business. One-third of the maternal deaths due to hemorrhage, especially postpartum hemorrhage (PPH) and some times even elective gynecological surgery poses life-threatening hemorrhage. Pelvis is highly vascular especially during pregnancy and postpartum. Obstetric hemorrhage management poses real threat to the managing obstetrician. Since it is life saving procedure every obstetrician and gynecologist must be exposed to this procedure. Sir Howard Kelly (1893) was the first person to this procedure. Mengert and Burchel later popularized this. It is one of the procedures used to control pelvic hemorrhage. Problems like poor exposure/tissue friability/retraction of vessels may be encountered in isolation and ligation of bleeding vessels during the management of postpartum hemorrhage or operative hemorrhage. This leads to failure of conventional methods to control hemorrhage, bilateral/unilateral IIAL may be the procedure of choice.

BRANCHES OF INTERNAL ILIAC ARTERY



Because of many anastomoses in the pelvis collateral circulation gets well-established after the ligation. The horizontal (Across

the mid line) anastomoses are of little or no value after the ligation as little transmission occurs after the ligation. The vertical or ipsilateral anastomoses are important. There are three main anastomotic channels responsible for collateral circulation. Lumbar (Branch of aorta) with Iliolumbar (Branch of internal iliac artery), middle sacral (Branch of aorta) with lateral sacral (Branch of internal iliac artery), superior hemorrhoidal (Branch of inferior mesenteric) with middle hemorrhoidal (Branch of internal iliac artery). These start functioning immediately after the ligation.

MECHANISM OF HEMOSTASIS

After the IIAL there is a reduction in pulse pressure, mean arterial pressure by (25-50%) and blood flow by 50% (up to 80%), which promotes clot formation. The ligation converts arterial system into venous system leading to stable clot formation thus brings hemostasis.

INDICATIONS

IIAL may be useful for the following:

- Uterine atony
- Uterine rupture
- Placenta accreta, increta and percreta
- Radical hysterectomy
- Primary or secondary postoperative hemorrhage
- Anticipated operative bleeding
- Others—in combination with other uterus saving procedures of postpartum hemorrhage.

There are two approaches: Transperitoneal and extra-peritoneal. Transperitoneal approach is usually practiced in obstetrics and gynecology.

STEPS

1. After opening the abdomen one can enter the retroperitoneal space by two ways. The simple route is by making an

incision over the peritoneum between the round ligament and the fallopian tube of the uterus, one reaches directly on the division of the common iliac artery by blunt separation.

2. The ureter remains medially in the medial fold of peritoneum and away from the vessels in this approach.
3. After identification and isolation, by either mixer or with an aneurysm needle, the vessel is ligated two to three centimeters away from its division (this avoids injury to external iliac vein and it ensures ligation of anterior division only) by a nonabsorbable/absorbable suture material.
4. Feel for femoral pulse after ligation, this ensures the internal iliac artery ligation only.
5. Keep the intraperitoneal drain before the closure of the abdomen.

The other intraperitoneal route is by making an incision on the posterior peritoneum at pelvic brim and tracing the common iliac artery to reach the division and then isolate the internal iliac artery.

Now this procedure can be done by selective arterial embolization with various materials.

COMPLICATIONS

The common complications are:

1. External iliac vein injury.
2. Internal iliac vein laceration/ injury.
3. Ligation of wrong structure like ureter, external / common iliac artery.
4. External iliac artery spasm and thrombosis.

The other complications like bladder atony, necrosis of buttock/bladder mucosa are rare.

POSTLIGATION REPRODUCTIVE FUNCTION

Usually because of good collateral circulation reproductive function is not affected. Menses return normally, pregnancies

occur and reach term and without intrauterine growth restriction suggesting adequate blood supply after ligation.

CONCLUSION

IIAL the procedure which every practicing obstetrician must be able to perform as this may be life/uterus saving procedure. This must be tried before obstetric hysterectomy. Usually no untoward side effects on follow-up and complications are transitory and rare. This can be also used as prophylaxis to prevent hemorrhage and to secure hemostasis (Intra/Post-operative) during major gynecological surgeries. Every resident must be exposed to this procedure.

STEPS OF THE PROCEDURE

- After opening the abdomen
- Uterus is eventrated
- The round ligament is identified
- The fallopian tube is identified
- About 5 cm incision is made on the peritoneum between the fallopian tube and round ligament
- Open and enter the retroperitoneal space bluntly with fingers
- The ureter remains with the medial fold of peritoneum and quite away from the vessels
- Directly one will be over the division artery with little dissection
- Pass the mixer from lateral to medial (about 3-4 cm away from the division) beneath the internal iliac artery with non-absorbable or absorbable sutures. This prevents injury to external iliac vein.
- Ligate the vessel with three knots
- Palpate the femoral artery for pulsations
- Ensure perfect hemostasis
- Keep the drain for about 12 to 24 hours
- Close the abdomen as usual.