

Role of Tranexamic Acid in the Arrest of Massive Postoperative Haemorrhage from Open Abdominal Myomectomy: A Case Report.

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Abstract

Background: Massive postoperative haemorrhage is a dreaded life-threatening complication of a wide variety of surgeries like myomectomy. Tranexamic acid, a safe and potent antifibrinolytic agent with non-specific haemostatic property, is currently the drug of choice for arresting bleeding from diverse causes even when the aetiology is not immediately apparent.

Aim: To use this case report to advocate for liberal use of tranexamic acid during myomectomy.

Case report: Mrs. B U is a 28-year old Para3+0 woman, presented with a huge abdominal mass of 9 years duration and a reducible umbilical hernia. Her abdominal ultrasound confirmed the diagnosis. She had open abdominal myomectomy and umbilical hernia repair that was complicated with massive postoperative haemorrhage of 1.3 litres. Intravenous 1g of tranexamic acid arrested the bleeding. She had four pints of blood transfused.

Conclusion: Tranexamic acid is a potent, safe and life-saving drug for arresting postoperative haemorrhage from myomectomy and should be used liberally during the procedure to avert complications.

Key words: Open Myomectomy, Postoperative Haemorrhage, Tranexamic acid.

I. INTRODUCTION

Uterine fibroid is a common benign gynaecologic tumor. Huge abdominal mass, abdominal pain, menorrhagia, anaemia and pressure symptoms are common indications for interventions in uterine fibroid.^{1,2} Myomectomy remains the method of choice for women who want to preserve their future childbearing potentials.³ Life-threatening haemorrhage is, however, a dreaded life-threatening complication of myomectomy that can lead to emergency hysterectomy, loss of future fertility and death.

Mechanical tourniquets, administration of haemostatic agents and laparoscopic procedures have been employed to reduce blood loss during myomectomy.⁴⁻⁶ Tranexamic acid, a safe and potent antifibrinolytic agent with non-specific haemostatic property, is currently the drug of choice for arresting bleeding from diverse causes even when the aetiology is not immediately apparent. It is a synthetic analogue of lysine amino acid that prevents bleeding from traumatized blood vessels by binding reversibly to four and five lysine receptors on plasminogen and competitively inhibits the activation of plasminogen to plasmin. It also inhibits plasmin activity directly.⁷ It stops cleavage of blood clots from traumatized blood vessels. The WOMAN⁸ and CRASH-2⁹ studies confirmed the efficacy of tranexamic acid in arresting bleeding in postpartum haemorrhage and acute traumatic haemorrhage respectively. It is very effective when given within three hours of the inciting event. The non-specific haemostatic property of tranexamic acid is noted to reduce perioperative blood loss and transfusion from a wide variety of causes like in orthopaedic, liver transplantation, prostatic, cardiopulmonary, tonsillectomy, epistaxis, and tooth extraction surgeries.¹⁰⁻¹²

We report this case to reaffirm the safety, efficacy and life-saving-haemostatic properties of tranexamic acid and to advocate for its liberal use in myomectomy and other surgeries and traumas.

II. CASE REPORT

Mrs. B U, a 28-year old P3+0 with 3 living male children presented to Semino Hospital and Maternity, Enugu on April 15, 2020 with a 9-year history of abdominal mass. She admitted to abdominal discomfort and early satiety but had neither menorrhagia nor any other symptoms. Her previous deliveries were normal. Her last menstrual period was on April 5, 2020. She has never used any method of contraception.

She was a well nourished healthy woman. Her pulse rate, respiratory rate and blood pressure were normal. The abdomen was distended with a firm, very mobile, non-tender mass compatible with uterine size of 34 weeks. A reducible umbilical hernia was also noted. Her abdominal ultrasound showed giant subserosal pedunculated uterine fibroid. She opted to available open abdominal myomectomy and was booked for the surgery on April 28, 2020. Her preoperative investigation results were: packed cell volume of 34%, normal urinalysis, HIV and HBsAg tests were negative, blood group was O Rhesus D positive, fasting and 2hour postprandial blood sugar levels were normal. Two units of blood were cross matched.

She had myomectomy and umbilical hernia repair as scheduled under spinal anaesthesia. Giant pedunculated fundal uterine fibroid that weighed 3.8 kg (Figure 1) was noted at surgery. Mechanical tourniquet with Foley's catheter size 22 was applied at the big peduncle (Figure 2) during myomectomy to reduce blood loss. Other intraoperative findings include normal tubes and ovaries, an umbilical hernia and an estimated blood loss of 200ml. She received in error iv tranexamic of only 300mg intraoperatively. She had iv ceftriazone 1g 12 hourly and iv flagyl 500mg 8 hourly for 72 hours during the perioperative periods. Within the first six post-operative hours, the abdominal drain yielded 1.3litres of blood. Correct dose of iv tranexamic acid 1g was given and 2hours follow-up review showed drainage output of 80mls only. She had a total of 4 pints of blood transfused. Iv tranexamic acid 1g 8hourly was continued for the next 24hrs. She was discharged on the 4th post-operative day with packed cell volume of 33%.

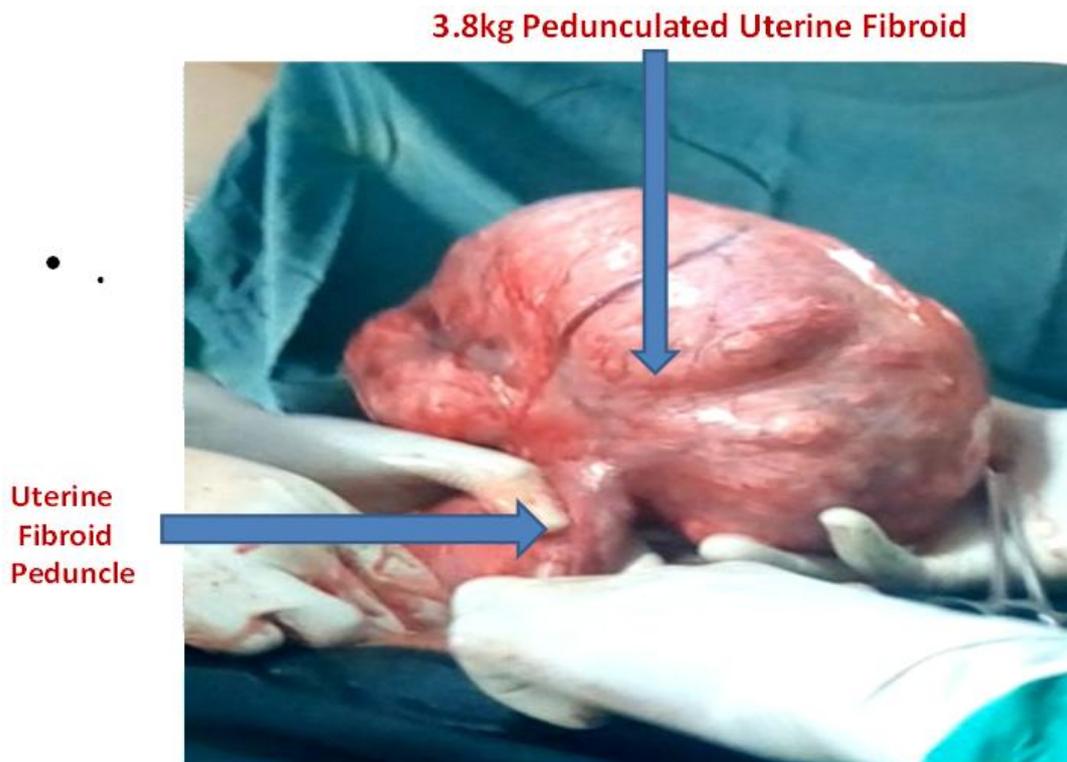


Figure 1: Fundal Pedunculated Uterine Fibroid with big Peduncle

Foley's Catheter size 22 used as Mechanical Tourniquet



Figure 2: Foley's Catheter applied at Pedicle as Mechanical Tourniquet

III. DISCUSSION

Uterine fibroid can be asymptomatic for many years in about 25% of cases.¹³ Mrs. B U presented with 3.8kg uterine fibroid with a big peduncle of 9 year duration. Huge abdominal mass and ease satiety were her only presenting symptoms before surgery. Open abdominal myomectomy is one of the surgical treatment options for symptomatic uterine fibroids, but it can be complicated with massive post-operative haemorrhage as in this case report. Mechanical tourniquet⁴ with Foley's catheter, and intraoperative iv tranexamic acid⁶ were employed to prevent bleeding in our patient. Unfortunately only 300mg instead of 1g of tranexamic acid was given in error to Mrs. B U, and she lost 1.3litres of blood. Correct dose of iv tranexamic acid of 1g arrested the bleed immediately. The use of this 'wonderful' drug prevented emergency hysterectomy, loss of future childbearing potentials, and death in this patient.

Life-threatening massive bleeding can occur when there is imbalance in the delicate regulation of the activators and inhibitors of clot formation and fibrinolysis.¹⁴ Excessive release of fibrinolysis activators during severe tissue trauma and tissue hypoxia can tilt the balance to hyperfibrinolysis, fibrin cleavage and continuous bleeding from traumatized blood vessels and tissues. Hyperfibrinolysis is common in the surgeries of organs rich in plasminogen proactivators like liver, kidney, pancreas, uterus and prostate gland. Tranexamic acid, an essential drug¹⁵ with non-specific haemostatic property, is of utmost importance in the treatment of such diverse causes traumatic and perioperative haemorrhage as we did in Mrs. BU. It is a potent drug that should be promptly utilized to avert complications even when the cause of the bleeding is not apparent. It inhibits conversion of plasminogen to plasmin and can also inhibit plasmin activity directly. It thus prevents fibrin cleavage and further bleeding. The side effects are rare and include changes in colour vision, blood clots and allergic reactions, but should be used with greater caution in people with kidney disease.

IV. CONCLUSION

Tranexamic acid is a potent, safe and life-saving-essential drug that must be available in every childbirth centres, surgical theatres and wards where postsurgical patients are managed. It should be liberally used as prophylaxis and treatment of perioperative haemorrhage like in myomyectomy and other variety of surgeries to avert complications and deaths.

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