THE EFFICACY OF NASOGASTRIC TUBE IN A LARGE BLOOD CLOT EVACUATION DURING CYSTOSCOPY

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ABSTRACT

Objective: *In this study we introduce using nasogatric tube as an alternative to procure a safe and efficient way to remove large troublesome blood clots during cystoscopy procedure.* ***Material & methods:*** *We prospectively perform blood clot evacuation using nasogastric tube suction (NGT) on 21 patients in Hasan Sadikin General Hospital Bandung, within 6 months period. A 24 fr sheath and 16 fr NGT connected to suction unit with a 300 mmhg negative pressure was set. A repetitive back and forth technique was set in motion during the procedure. Cystoscopy time and NGT suction time was documented.* ***Results:*** *All patients were successfully managed with this method without complication during the procedure. The average time for clot removal was 5 minutes 8 seconds with average cystoscopy time was 20 minutes 12 seconds and average estimated blood clots volume was 483 grams.* ***Conclusion:*** *Evacuation using NGT suction is effective, safe and an efficient way to remove a large bothersome clots.*

Keywords: *Cystoscopy, nasogastric tube, bloodclots.*

ABSTRAK

Tujuan: *Pada studi ini, kami memperkenalkan penggunaan nasogastric tube sebagai prosedur alternatif yang aman dan efisien untuk menghilangkan bekuan darah besar pada prosedur cystoscopy.* ***Bahan & cara:*** *Kami melakukan prosedur evakuasi bekuan darah menggunakan suction nasogastric tube (NGT) kepada 21 pasien di RSUP Hasan Sadikin Bandung, dalam rentang waktu 6 bulan. Kami menggunakan sheathcystoscopy berukuran 24 Fr dan NGT berukuran 16 Fr yang dihubungkan dengan unit suction bertekanan negatif yang memiliki tekanan 300 mmHg. Gerakan repetitif ke depan dan ke belakang dilakukan saat prosedur. Waktu cystoscopy dan waktu penghisapan menggunakan NGT didokumentasikan.* ***Hasil:*** *Semua pasien berhasil ditangani dengan metode ini tanpa komplikasi saat prosedur. Rerata waktu untuk pembuangan bekuan darah adalah 5 menit 8 detik, dengan rerata waktu prosedur cystoscopy adalah 20 menit dan 12 detik. Estimasi jumlah bekuan darah yang berhasil dievakuasi adalah 483 gram.* ***Simpulan:*** *Evakuasi menggunakan suction NGT merupakan cara yang efektif, aman dan efisien untuk menghilangkan bekuan darah yang besar.*

Kata Kunci: *Cystoscopy, nasogastric tube, bekuan darah.*

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INTRODUCTION

Large blood clots that was formed in the bladder is a common widespread problems that easily found by general practitioner, surgeon and urologist in the emergency setting. These problems presents in rural and central hospital. Various etiologies including urinary tract carcinoma, radiation cystitis, bladder stone, benign hyperplasia of the prostate, post operative bleeding after TUR, and trauma to the urinary tract can produce a gross hematuria that will later on develop into blood clot.[1,2]

Formation of clots is one of the defense mechanism and an essential part in hemostasis. In which the physiological body prevents the ongoing bleeding that was caused by an insult towards the

blood vessel wall. The process starts when the damaged endothelial cell stimulates the prothrombin activator that converts prothrombin into thrombin. Later on the thrombin acts as an enzym to convert the fibrinogen into threads of fibrin that construct thrombocyte, red blood cell and plasma to form a clot.[1]

This newly form blood clot may create problems in the bladder. Small clots may pass through the urethra while larger clots will create difficult to pass. The active urine production from the kidney will flush the blood clot arround the bladder. Within time clots will develop into more complex and large in volume and size. With a size larger than urethral diameter these clots will prevent the urinary passage through the urethra and create severe obstruction.[1-3]

Most cases may be present as an emergency, due to total obstruction it results in severe tenderness on suprapubic region, abdominal discomfort and anemia.[4]

Conventionally these cases can be treated with placing large bore three way urethral catheters with irrigation to prevent clot formation and facilitate clot removal. Manual evacuation may be needed to remove the clot by using a 50 cc syringe with catheter tip. Trapping the clots inside the syringe may need relentless work and catheter manuver.[4]

Several studies has also published the use of anticoagulant instillation to facilitate removal of these clots. This attempt has boundaries in which large, interactable clots has formed in the bladder and it needs surgical intervention.[2,3,5]

During surgery, Ellik evacuator has been a primary tool to evacuate blood clot during cystoscopy. Eventhough the risks during evacuation is bladder perforation, due to its high pressure input towards a distended bladder, Ellik evacuator still is the primary choice of Urologists for blood clot or tissue removal in the bladder.[4]

Here we introduce an alternative method in a severe, large, blood clot evacuation during cystoscopy. A modification using the nasogastric tube during endoscopic provide a safe and efficient way to facilitate blood clot removal.

OBJECTIVE

To introduce an alternative method to remove large troublesome blood clots during cystoscopy procedure using modification of a nasogastric tube.

MATERIAL & METHOD

Basic endoscopic instruments were needed before undergone surgery including: sheath – obturator no 24 Fr, resectoscope, cutting loop, ellik evacuator, nasogastric tube no 16 fr, light source, telescope 30°, monitor (optional), Water irrigation channel, surgical suction device with pressure setting, We also used a medium sized weight scale device to measure the total clot size and a time watch to measure a total cystoscopy and blood clot removal time. Nasogastric tube no 16 fr length were modified by cutting the end of the NGT tip so it has a single entry and measuring the tip of the nasogastric ends in 1–2 cm in cystoscopy beak while using the black dots in the nasogastric tube as a marker to minimize the risk of bladder injury during the procedure.

Subjects inclusion criteria were; adult male or female, patient with symptoms of urinary retention (abdominal tenderness, distended bladder, gross hematuria, and an ultrasound reveals a large blood clot occupying half space of the bladder), failure in conservative treatment includes placing a large bore 24 fr catheter with manual irrigation.

Exclusions criteria in patients which endoscopic urethral access were impossible such as severe stenosis or stricture disease. Thus open surgery to perform blood clot evacuation is necessary.

The procedure starts after the patient enters the operating theater. After spinal or general anesthesia, patients were positioned into lithotomy position. Septic and antiseptic draping was performed. Diagnostic urethrocystoscopy is performed with resectoscope to evaluate the lining of the urehra, the bladder neck, bladder wall, blood clots, and source of the bleeding. At this stage difficulties came due to poor visualization caused by large bloodclots that obstruct the view during cystoscopy. The boundaries between the clots and bladder wall often foggy. Remove the telescope leaving only the sheath at the site of the bladder neck. With the modified NGT that already being measured. Set the pressure suction device into negative 300 mmhg. With back and forth movement remove the clots while leaving the water channel open. After completion we re-evaluate the bladder and find the underlying cause of the bleeding. Complications such as bladder laceration and bladder perforation also

The average clot time removal, total cystoscopy time, estimated blood clot volume and intraoperative complications were documented.

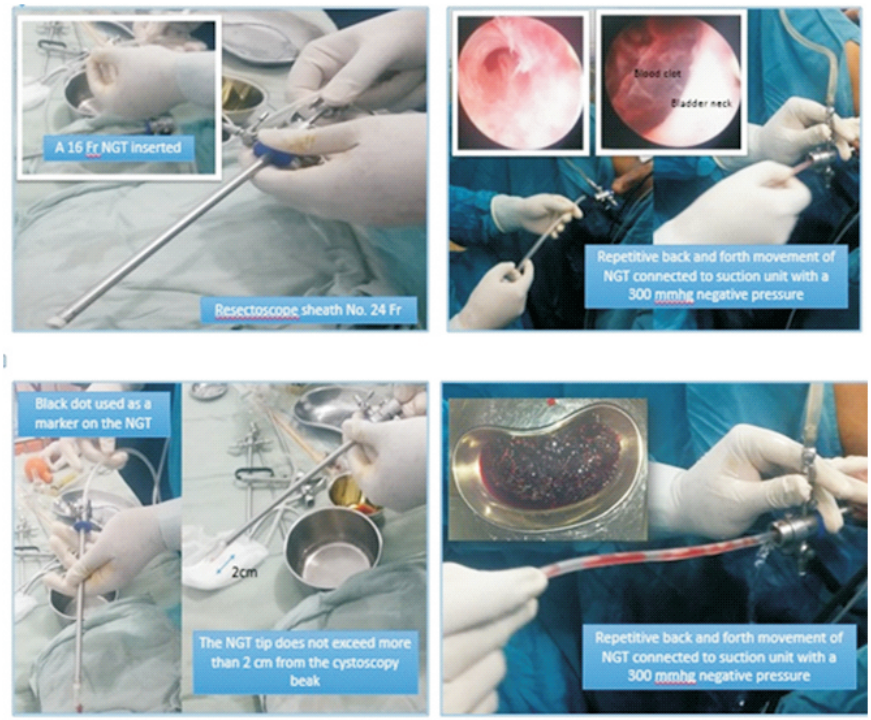

Figure 1. Complete step by step procedure.

RESULTS

A total 21 patients were successfully managed by this method, with male predominance 17 to 4. The mean age in this study was 64.6 years old. Most common etiology in this study by frequency was post operative bleeding – after TUR (57%), BPH with infection (14%), bladder carcinoma (14%), radiation (9.5%) and prostate cancer (4.7%). The average of total operation time is approximately 25 minutes 20 seconds.

No complication were found during the procedure. The average time for clot removal was 5 minutes 8 seconds with average cystoscopy time was 20 minutes 12 seconds and average estimated blood clots volume was 483 grams. Largest clot found in one patient with clot volume reach almost 600 cc. The clot was large and occupies all the bladder space, in this patient we did not perform ultrasound due to emergent situation the patient continues to have interactable pain and signs of sepsis.

Patient was discharged from the hospital after third operation day. From a total 21 patient, 16 patients was discharge without catheter others were discharged with catheter. No complications were noted on all patients intraoperatively. We follow up this patient untill day 14 since the day of the operation in outpatient setting. Remaining catheter were removed after day 7. No complication were noted on all patient postoperatively.

Table 1. Summary of study result.

Variable	N
Age	± 64.6 years
Male to female ratio	17 : 4
Operation time	± 25 min
Cystoscopy time	± 20 min
Nasogastric time	± 5 min
Estimated blood clot volume	483 gr
Anesthesia	Spinal
Most common etiology	Post-op bleeding

DISCUSSION

Persistent gross hematuria may result in blood clot formation. Persistent formation of clot may result in clot retention. It may necessitate surgical intervention if it can not be resolved with manual irrigation or with a large-bore Foley catheter. Operative intervention with a resectoscope and Ellik evacuator is applied.[1,2]

However, removing a large, organized clot retention can be difficult, time consuming and may not always besuccessful because their relative stiffness. Unsuccessful Ellik evacuation with force may result in bladder laceration and perforation.[2]

Before establishing this method previously we use a conventional method 'a non operative procedure' by inserting a large bore catheter with manual irrigation. But these method were generally unsuccessfull because of the patient untolerable pain during procedure even with adequate analgesics. Placing the catheter towards a favorable position also difficult and caused irritation towards the bladder.[2,4]

Using the nasogastric tube as an alternative method in blood clot evacuation has several advantages.[5,6] First the negative pressure in the nasogastric tube will help the relieve of high pressure inside the bladder, risks for having an additional intravesical pressure during the procedure were none, Therefore reducing the risks for bladder perforation due to high pressure. Secondly the entrapment of clot inside the nasogastric tube will help dissolution of the bloodclots, we rarely use cutting loop for blood clot resection.[5] And the third reason is this method is easy and feasible to do for any Urologist. It does not need special skill to apply this method also the nasogastric tube is a vastly available instrument and easily found in any hospital.

After successfull entrapment of the clots while leaving the water irrigation open we do movement repetition, inserting the nasogastric tube back and forth In time it will slowly disperse the clot by pressing the clot entrapment against the cystoscopy beak. Sometimes we remove all the sheath together to entrap larger clots and reinsert the sheath blindly with obturator. All procedure was done under spinal anestesia we also reevaluate the bladder for underlying cause of the clots and perform bleeding control during the procedure.

Follow up was done until 2 weeks after the operation. There are 4 patients were discharged with catheter still in place, three of them due to bladder carcinoma and one of them is due to post operative bleeding (patient refuse to undergo catheter removal). After outpatient visit the patient undergo catheter removal except for bladder carcinomas patient due to intermittent bleeding of the cancer, patient was scheduled to undergo CT and cystectomy later on. The recurrent acute retention condition was not found in all patient.

CONCLUSION

We believe using the nasogastric tube, will help urologist to perform bloodclot evacuation better. It is a safe, feasible and an efficient way to remove a large bothersome clots.

For further enquiries we recommend a larger sample and a comparison study between the nasogastric tube and the standard ellik evacuator. Hopefully it will boost the use of nasogastric tube in bloodclot evacuation.

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