

IS GROUP AND SAVING BEFORE THE MODERN BIPOLAR TRANSURETHRAL RESECTION OF THE PROSTATE STILL NECESSARY?

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Abstract

Introduction: Group and save (G&S) sampling is commonplace for patients undergoing transurethral resection of the prostate (TURP) due to the historically high risk of bleeding. However, modern adjustments to the procedure, including the advent of bipolar TURP in saline, have significantly reduced this risk. This study assessed whether routinely performing G&Ss before the modern TURP is still appropriate.

Materials and Methods: This study was a retrospective review of all patients who underwent a TURP from January 2009 until December 2019 in one centre. A total of 687 patients were identified during this period. In addition, data was collected on G&S samples, blood products, and postoperative complications such as clot retention or if patients required a blood transfusion.

Results: All patients had G&S samples taken before their operation. Only six (0.87%) patients required a blood transfusion. Half were transfused intra-operatively and half post-operatively. Remarkably, none of the transfused patients were below the National Institute for Health and Care Excellence (NICE) threshold to transfuse of <70g/L(8). Six patients were also noted to develop clot retention following the catheter removal.

Discussion and Conclusion: This study has determined that patients undergoing a TURP rarely require blood transfusions. We propose that the practice of routinely taking G&S samples before this procedure should be reviewed. This would give a financial benefit and relieve patients of the unnecessary test. We would recommend thorough optimisation of patients before surgery, including review of anticoagulation and correction of any preoperative anaemia.

Keywords: *TURP, blood transfusion, cost-benefit analysis, blood loss, preoperative care, retrospective studies*

INTRODUCTION

Transurethral resection of the prostate (TURP) has become an established endo-urological procedure, with approximately 15,000 being performed annually in the UK.¹ Therefore, centers must make this procedure as effective as possible, from a clinical and service perspective.

Despite being commonplace, TURP is associated with various complications, particularly bleeding from the prostatic bed, potentially causing clot retention or requiring transfusion.² Historically, the risk of these complications was significant: Transfusion rates for TURP were reported as high as 21.2 and 22.0% in 1979 and 1992 respectively, and the rate of clot

retention was reported as 11.0% in 1992.^{3,4} However, due to various innovations, including performing a bipolar resection in saline, these rates have declined in recent years and currently stand between 1.8–4.8% for transfusion and 0.8–1.2% for clot retention.^{5–7}

To determine whether to order blood products or collect and save the patient's own before operating, trusts produce a Maximum Surgical Blood Ordering Schedule (MSBOS) based on guidance from local clinicians. For example, our centre at the George Eliot Hospital in Nuneaton, UK, performs bipolar resection in saline and emphasizes not breaching the capsule and performing meticulous haemostasis. A 22 French two-way or three-way catheter is placed post-operatively with 20–30 mL of water in the balloon. Two G&S samples are routinely taken before operating, a practice that appears to be commonplace in the UK. Anticoagulation is adjusted peri-operatively as per local guidance.

This paper aims to determine what proportion of patients undergoing TURP require transfusion and review whether this practice is still appropriate. This is an analysis of all patients undergoing TURP at our centre in the past decade.

MATERIALS AND METHODS

All patients were included from January 2009 until December 2019. Data was collected regarding whether patients had G&S samples taken, had blood products requested, required transfusion, or had complications post-operatively such as clot retention. This data were retrospectively analysed. Blood loss was estimated by haemoglobin (Hb) change pre- and post-operatively. Analysis was performed in Microsoft Excel and the Pearson correlation coefficient test was performed to determine the relationship between grams resected and Hb drop.

RESULTS

A total of 687 patients underwent TURP at our institution across the decade. The mean age at operation was 71.42 (SD \pm 7.89) with a normal

distribution (Figure 1). Average pre-op Hb and sodium were 141.17g/L (SD \pm 15.34) and 140.19 mmol/L (SD \pm 3.74), respectively. 50.8% (n = 344) of patients had a urethral catheter in situ before the operation.

All patients had two G&S samples taken pre-operatively; of these, only 0.87% (n = 6) required blood transfusion. Of the 0.87%, half had blood given intra-operatively, and half had blood prescribed on the ward in a non-urgent setting. Preoperative Hb levels for patients requiring transfusion were generally lower than those that did not require transfusion (Table 1). They ranged from 92–130g/L. Notably, none of these patients were below the NICE threshold to transfuse <70 g/L(8). A total of 0.87% (n = 6) of patients were recorded as having clot retention following the removal of the catheter. There was a statistically significant positive correlation between resection weight and peri-operative Hb change ($r(561) = 0.292, p = <.001$).

DISCUSSION

Our data suggests our transfusion rate of 0.87% ($n=6$) is less than those published in the literature of 1.8–4.8%.^{5–7} Furthermore, only half of our patients that required blood products were transfused in theatre, which gives an intra-operative transfusion rate of only 0.44%; three cases in a decade. While care must be taken to prevent any patients from having an intra-operative haemorrhage requiring transfusion in the future, we believe this rate to be acceptable.

On average, the cohort that required transfusion was older, had lower preoperative Hb, and lost more blood intra-operatively. These patients also had greater resection weights (Table 1). Unfortunately, the numbers are too small to provide any statistical significance. However, our results suggest modifiable and non-modifiable risk factors when considering haemorrhage post-TURP.

Modifiable factors (preoperative anaemia, underlying coagulopathies, anticoagulation status) should be optimised pre-operatively. In addition, non-modifiable risk factors (age and prostate size)

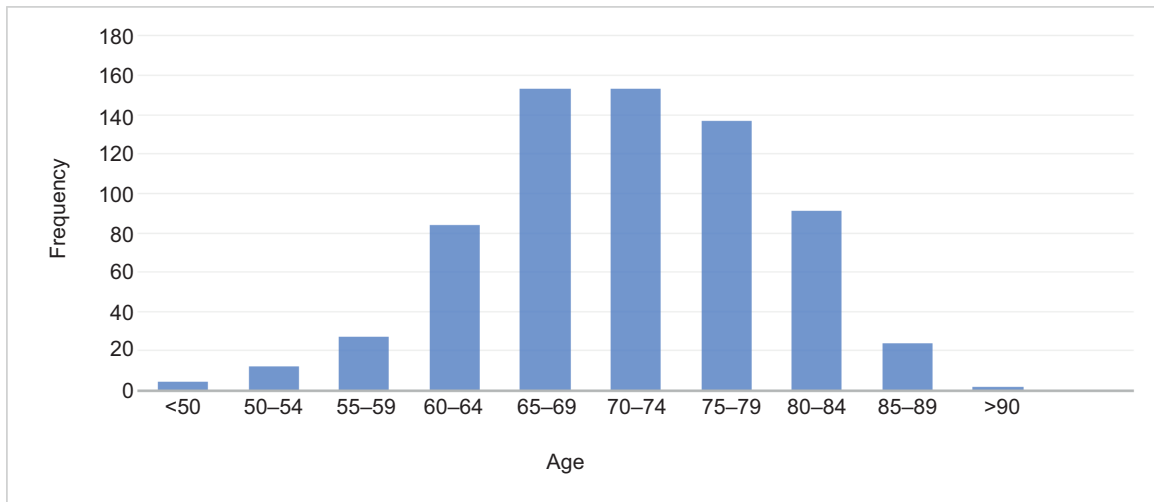


FIGURE 1 The mean age of the patients at the time of operation was 71.42 (SD ± 7.89), with a normal distribution.

TABLE 1 Characteristics of Patients that did and didn't Require Transfusion

	Did not require Transfusion	Required Transfusion
<i>n</i>	681	6
Mean Age (years)	71.27	77.00
Grams Resected (g)	23.72	33.83
Pre-op Hb (g/L)	147.98	116
Post-op Hb (g/L)	140.39	95.33
Peri-op Hb Change (g/L)	8.21	20.67

could be used to designate patients at higher risk of peri-operative bleeding. Finally, our data demonstrated a statistically significant positive correlation between larger resections and peri-operative Hb change regarding resection weights. While this may seem common sense, this relationship should be considered in operative planning and could therefore be an argument for selective G&S sampling, although even in this higher-risk cohort, the risk remains relatively low.

The proposal of not routinely obtaining a group and saving before certain surgeries has previously been addressed by multiple other surgical

specialties.⁹⁻¹⁴ In a similar but smaller scale study assessing the need for G&Ss before TURP and transurethral resection of bladder tumours, of the 167 patients undergoing TURP, only 0.6% (*n* = 1) required a blood transfusion post-operatively. Due to the low transfusion rate, the study determined that routine G&Ss are unnecessary for all patients.¹² Our data support their findings and conclusions.

Other studies reviewed the need for G&Ss before breast cancer surgery and another before laparoscopic cholecystectomies; both studies determined that due to the low rate of transfusion required intra- and post-operatively, the MSBOS should be modified so as not to require G&Ss.^{9,10}

Given that none of the patients transfused were below the NICE threshold of <70g/dl, and of those patients, half required blood in a non-urgent setting which could have been requested and given safely on the ward. Therefore, we would suggest that taking routine G&Ss for patients undergoing TURP may be omitted from routine practice with the caveat that in higher-risk patients with non-modifiable risk factors, selective G&S sampling may be appropriate.

We would encourage clinicians to ensure patients are optimised before operating and perform meticulous haemostasis intra-operatively. In

addition, they should provide any anticoagulants or anti-agglutinants that are stopped and any underlying coagulopathies are addressed before surgery.

This study did not collect data on preoperative anticoagulation; however, in line with trust policy, all anticoagulation is stopped at an appropriate time before the operation, and therefore this should not have influenced our results.

The literature shows the price of processing a group and save sample ranges between £4.58 and £23.52.⁹⁻¹⁴ Extrapolating at an average price of £14 per G&S, our centre would have saved £9,618 or £19,236 over a decade if one or both G&S samples were omitted. Given that each patient requires two samples, the omission of this practice could save up to £140,000 annually across England and Wales. Furthermore, it may save time for staff and simply relieve patients of an unnecessary test during a demanding time.

CONCLUSION

This was a retrospective study examining our practice of routinely taking G&S samples before TURP. While these patients often have haematuria post-operatively, they rarely require a blood transfusion, and if they do, it is likely to be in a non-urgent postoperative setting. We recommend that clinicians omit this practice and ensure meticulous intra-operative haemostasis and that patients are adequately optimised by carefully reviewing anticoagulation status and correcting preoperative anaemia or coagulopathy. In elderly or comorbid patients or those with larger prostates, selective G&S sampling may be considered.

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