Utilisation of PuraBond® in TransOral Robotic Surgery (TORS) for oropharyngeal cancer

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Background

TORS has recently been used more frequently in ENT surgery. Robotic used has allowed unprecedented 3D views and improved access to difficult-to-reach tumours. Previous open approaches, which typically carried high morbidity and mortality have since gone out of vogue. TORS however, is not without complication, the most significant being haemorrhage that can result in airway compromise, hypovolaemia and death.

PuraBond® (3D Matrix Ltd, Tokyo, Japan) is a RADA16 synthetic peptide that can self-assemble and form a transparent hydrogel 3D matrix to achieve haemostasis locally. Previous studies have demonstrated its use in gastrointestinal endoscopy, cardiac and vascular surgery as well as more recently in ENT sinus surgery with good results. Our study aimed to assess the utility of PuraBond in TORS patients at our centre.

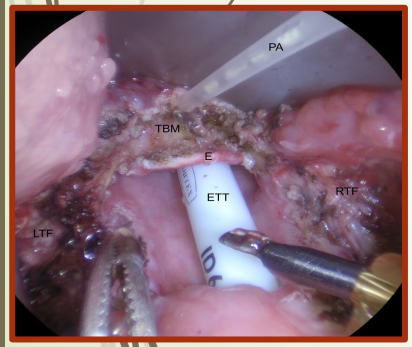

Fig 1. Application of PuraBond to the oropharynx. PA = PuraBond applicator, TBM = tongue base mucosectomy, ETT = endotracheal tube, E = epiglottis, R/LTF = right/left tonsil fossa

Methods

A retrospective case series was performed at a single tertiary teaching hospital trust (UK). All consecutive patients who underwent TORS with PuraBond® (performed by a single surgeon, M.D.) between August 21 – December 22 were included. The primary outcome measure was post-operative haemorrhage (primary <24hr from surgery or secondary within 1-30 days). Secondary outcome measures were length of stay, feeding tube/tracheostomy requirement, re-admission rate within 30d and surgeon-reported ease of PuraBond® use.

Results

Our study includes 37 patients who underwent TORS with PuraBond application at our centre. This represents 19 male patients (51.4%) and a mean age of 57.5 years. Patients were excluded if they were operated on by a different surgeon. No patients were lost to follow-up. Figure 2 shows the spread of procedures performed with TORS. A second procedure (dental extraction, neck dissection, tonsillectomy) was performed in 19 cases.

Fig 2. Bar chart to show distribution of procedures performed with TORS and PuraBond application.

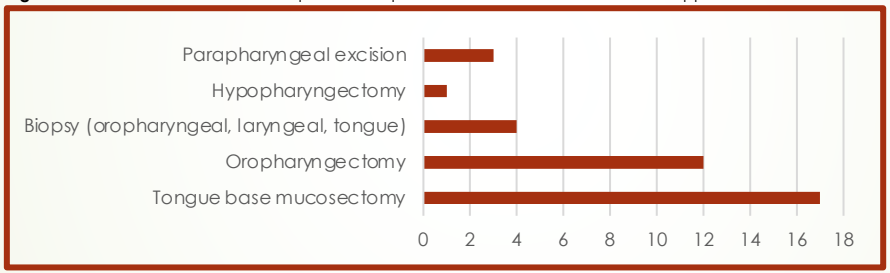

Table 1. Outcome measures following TORS procedures.

Outcome measures	
Primary or secondary haemorrhage	0 (0%)
Requirement for feeding tube or tracheostomy	0 (0%)
Hospital re-attendance or readmission	0 (0%)
Reported 'easy' application of PuraBond	37 (100%)
Duration of admission (days)	2.92 (range 1.48 – 4.54)

Conflicts of interest: MD is an employed consultant for 3D Matrix Ltd who manufacture Purabond®. There are no other conflicts of interest to declare.

Discussion

OPSCC rates are increasing worldwide due to HPV-mediated disease. A systematic review and meta-analysis showed TORS had favourable oncological and quality of life outcomes, comparable with chemoradiotherapy.

Our study is the first-in-context to specifically evaluate the use of PuraBond in TORS. A case-report following coblation for nasopharyngeal stenosis showed PuraBond reduced the reformation of fibrosis. It has also been shown to reduce post-operative bleeding in open cervical surgery.

This study demonstrates a potential role for PuraBond in TORS due to promising early outcomes in terms of haemorrhage, swallowing, pain and length of hospital stay. We recognise these results as preliminary in nature and advocate for larger, prospective, controlled and ideally randomised studies to better define whether these observed benefits can be translatable across a larger cohort of patients in a consistent manner.

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