Morbidity and mortality following laparoscopic gastric pull up reconstruction for total pharyngo-laryngo-oesophagectomy: a single UK centre experience

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Introduction

Despite substantial advancement in the management of head and neck cancer over the years, it still carries a significant disease burden. Hypopharyngeal carcinoma has a poor survival rate, as patients are often asymptomatic in early disease with cervical oesophagus invasion by time of presentation ⁽¹⁾. Surgical resection of malignancy is often the first-line treatment, with many patients undergoing total pharyngo-laryngo-oesophagectomy (TPLO), either as a stand-alone treatment or combined with chemo- and radiotherapy.

One of the greatest surgical challenges is reconstruction following TPLO. A number of methods have been described in the literature including the gastric pull up ⁽²⁾. The gastric pull up is a widely used method with major advantages including complete extirpation of the oesophagus and a single anastomosis in the cervical area. In spite of this, the gastric pull up is still associated with significant morbidity and mortality⁽⁵⁾. Complications are common, occurring in up to 41.8% of patients in some cases, with significant associated morbidity⁽⁶⁾.

In efforts to reduce morbidity and mortality, advancements have been made in laparoscopic and thoracoscopic approaches to the procedure, eliminating the need for thoracotomy or laparotomy. ⁽⁷⁾.

Aims

1. Review morbidity and mortality of all patients who underwent gastric pull up reconstruction following TPLO at St George's Hospital.
2. Compare results of laparoscopic approach and open approach to the gastric pull up reconstruction.
3. Compare mortality and morbidity of laparoscopic gastric pull up reconstruction at SGH to that described in the literature.

Methods

A review of the literature surrounding the gastric pull up reconstruction was carried out, specifically focusing on morbidity and mortality achieved using a laparoscopic gastric pull up reconstruction technique.

The notes of all patients who underwent gastric pull up reconstruction following TPLO at SGH were reviewed, focussing on morbidity and mortality. Morbidity (specifically anastomotic complications and anastomotic stricture) and mortality achieved using an open approach were compared to a laparoscopic approach. Patient data was followed up for 5 years.

Results obtained at St George's Hospital were then compared against the literature.

Results

Age at Surgery	Sex	Stage of Disease	Tumour Type	Primary/ Salvage Surgery	Method of gastric pull up	Extent of Surgery
61	M	T3/4N0M0	SCC	Primary	Open	Panendoscopy, TPLO with GPU and total thyroidectomy
84	M	T3NOM0	SCC	Salvage	Open	TPLO with GPU and bilateral selective neck dissection
44	F	T4N0M0	SCC	Primary	Open	TPLO with GPU
68	M	T4N1M1	SCC	Salvage	Laparoscopic	TPLO with GPU and bilateral selective neck dissection and total thyroidectomy
68	M	T4N0M0	SCC	Primary	Laparoscopic	TPLO with GPU and bilateral selective neck dissection and hemithyroidectomy
68	F	T3N1M0	SCC	Primary	Open	TPLO with GPU and modified radical neck dissection
65	M	T4N1M0	SCC	Primary	Open	TPLO with GPU and bilateral level II-IV neck dissection and total thyroidectomy
63	M	T4aN2cM0	SCC	Primary	Laparoscopic	TPLO with GPU and bilateral modified radical neck dissection
74	M	T3N0M0	SCC	Primary	Laparoscopic	TPLO with GPU and selective bilateral neck dissection and dental extraction
57	F	T4N0M0	SCC	Primary	Laparoscopic	TPLO with GPU and bilateral selective neck dissection and total thyroidectomy
72	M	T2N0M0	SCC	Primary	Laparoscopic	TPLO with GPU
70	M	T3N0M0	SCC	Salvage	Laparoscopic	TPLO with GPU and bilateral selective neck dissection
63	M	T4N0M0	SCC	Primary	Laparoscopic	TPLO with GPU and bilateral selective neck dissection
44	M	T3N2M0	SCC	Salvage	Laparoscopic	TPLO with GPU and bilateral selective neck dissection
56	F	T4N1M0	SCC	Salvage	Laparoscopic	TPLO with GPU and bilateral neck dissection
81	M	T3N0M0	SCC	Primary	Laparoscopic	Total bilateral neck dissection and total thyroidectomy

Table 1. Demographics of patients undergoing total pharyngolaryngo-oesophagectomy with gastric pull up. Abbreviations: SCC – squamous cell carcinoma; TPLO – total pharyngo-laryngo-oesophagectomy; GPU – gastric pull up.

30-day post-operative mortality			Anastomotic complications		Stricture	
Gold standard	Open	Laparoscopic	Open	Laparoscopic	Open	Laporoscopic
6%	0%	0%	3/5 (60%)	5/11 (45.5%)	1/5 (20%)	2/11 (18.2%)

Table 2. Mortality of TPLO with gastric pull up. Gold standard is mortality data from 2000-2012, as set by Butsky et al⁽⁶⁾. Open and laparoscopic figures refer to St George's Hospital.

Table 3. Anastomotic complications and stricture rates for open and laparoscopic gastric pull up approaches. Anastomotic complications included fistulae, graft failure, graft necrosis and anastomotic leak. Percentages represent percentage of total number of cases.

Discussion

The gastric pull up is an important technique for reconstruction following total pharyngo-laryngo-oesophagectomy and the reducing mortality over the past decades is promising. The Gold Standard mortality for the TPLO with gastric pull up, is 6% as set by Butsky et al⁽⁶⁾. Our centre demonstrates a 30 day post-op 0% mortality rate from the procedure, improved on the Gold Standard (Table 2). The 5-year survival for the gastric pull up is 43.75%, a 13%.

Table 3 demonstrates the rates of anastomotic complications and strictures. The rate of anastomotic complications was higher in the open group compared to the laparoscopic group, with 3 of the 5 patients developing complications compared to 5 of the 11 laparoscopic patients. The percentage of laparoscopic cases experiencing anastomotic complications was 45.5%, higher than the gold standard of 16%. The stricture rate was comparable for both open and laparoscopic pull ups.

Overall the laparoscopic gastric pull up has a lower percentage of anastamotic complications and strictures, compared to the open approach of gastric pull up reconstruction. This, along with its 0% 30-day mortality, make it an excellent method of performing gastric pull up reconstruction.

This single UK centre demonstrates the value of the gastric pull up post-TPLO, both in terms of reduced complication and stricture rates, as well as a 30-day post-operative mortality lower than the Gold Standard. Moving forward, research is needed into the prevention of anastomotic complications and strictures, as well as optimising their management to ensure proper return to function.