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Management of complications after laryngopharyngectomy

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The only surgeon who doesn't experience *complications*, is the surgeon who doesn't do much surgery."


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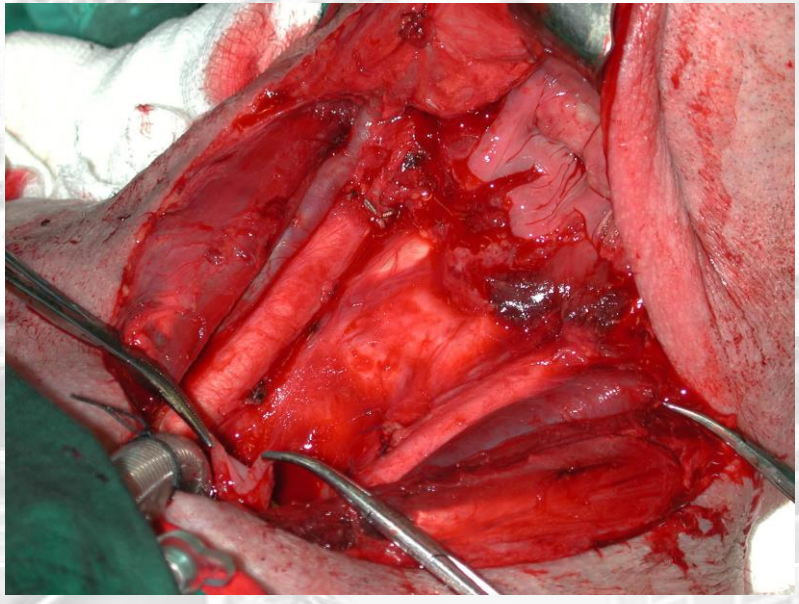
Overview

- Current approach in total laryngopharyngectomy
- Burden of complications
- Common complications
  - Preventing them
  - Managing them

Total laryngopharyngectomy

- Surgery to remove the larynx and pharynx leaving a circumferential pharyngeal defect offers the possibility of cure

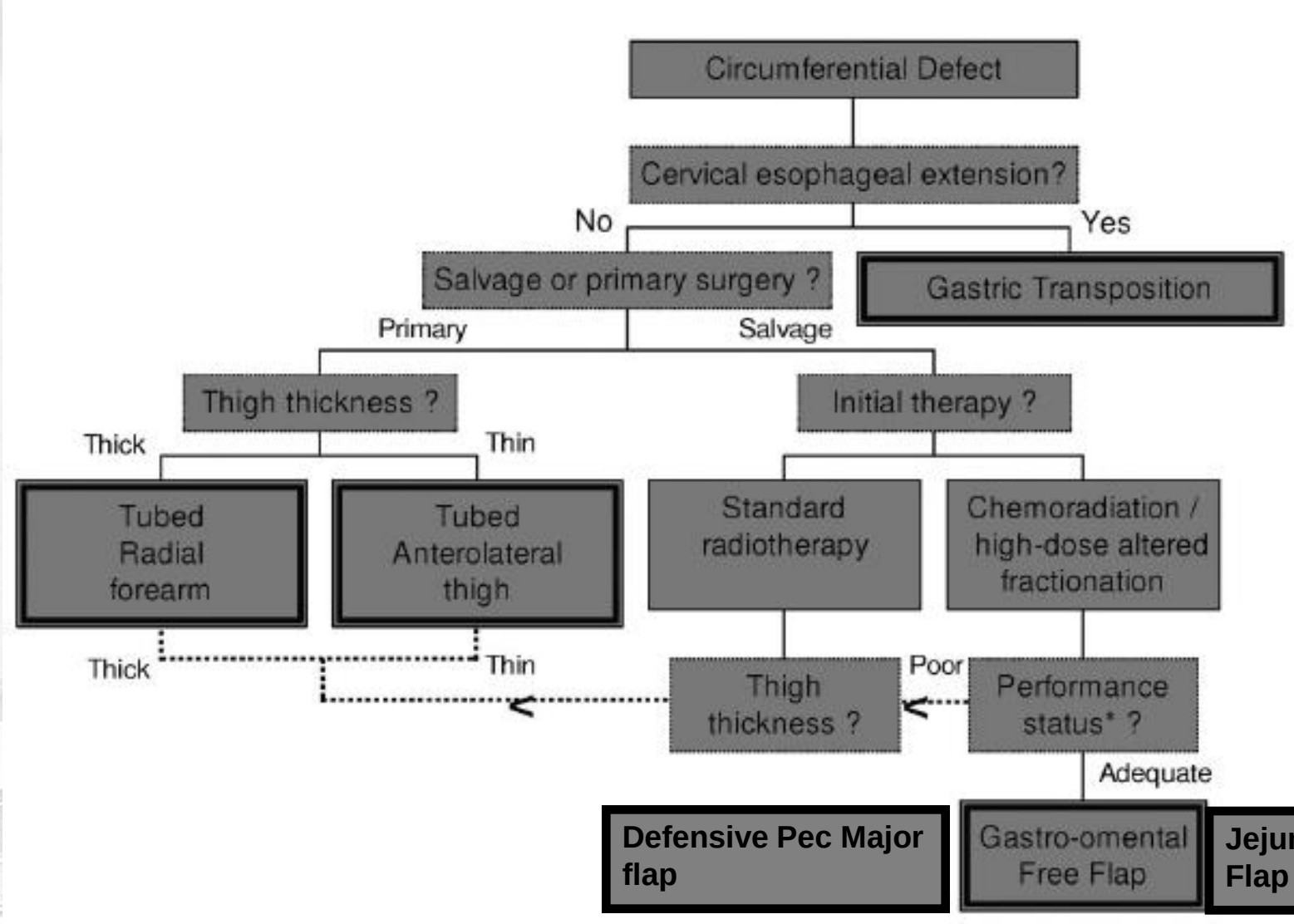
Centre	n	5 yr OS	5 yr DFS
Toronto[1]	153	37%	45%
Brisbane[2]	162	33%	53%

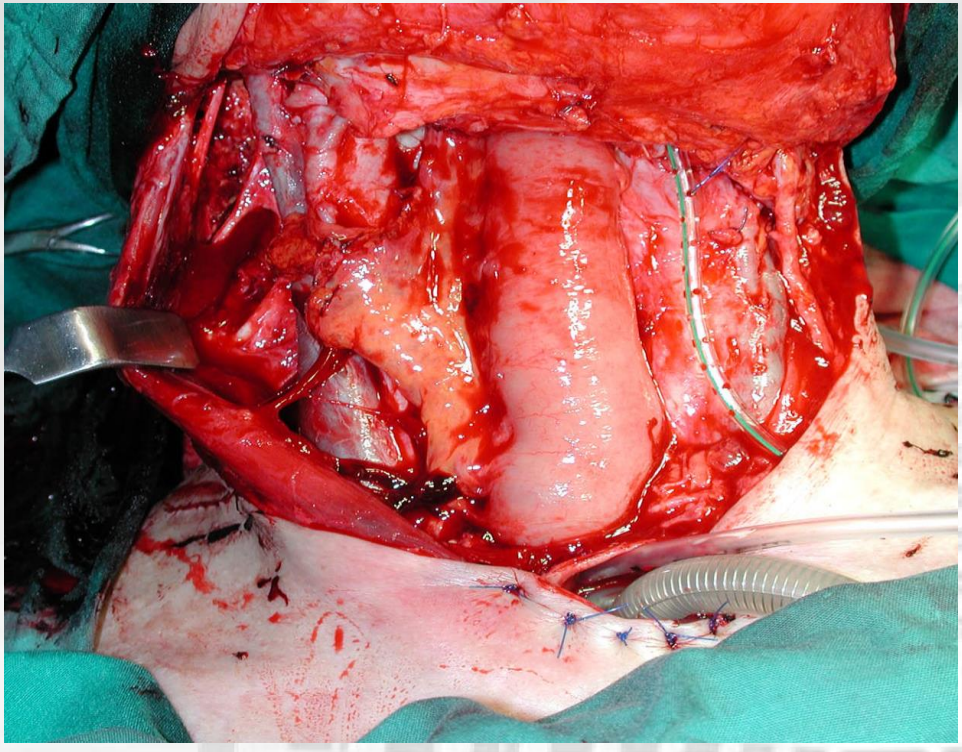


[1] Clark JR et. al. Laryngoscope (2006) 116: 173-181

[2] Bova R et. al. Laryngoscope (2005) 115: 864-869

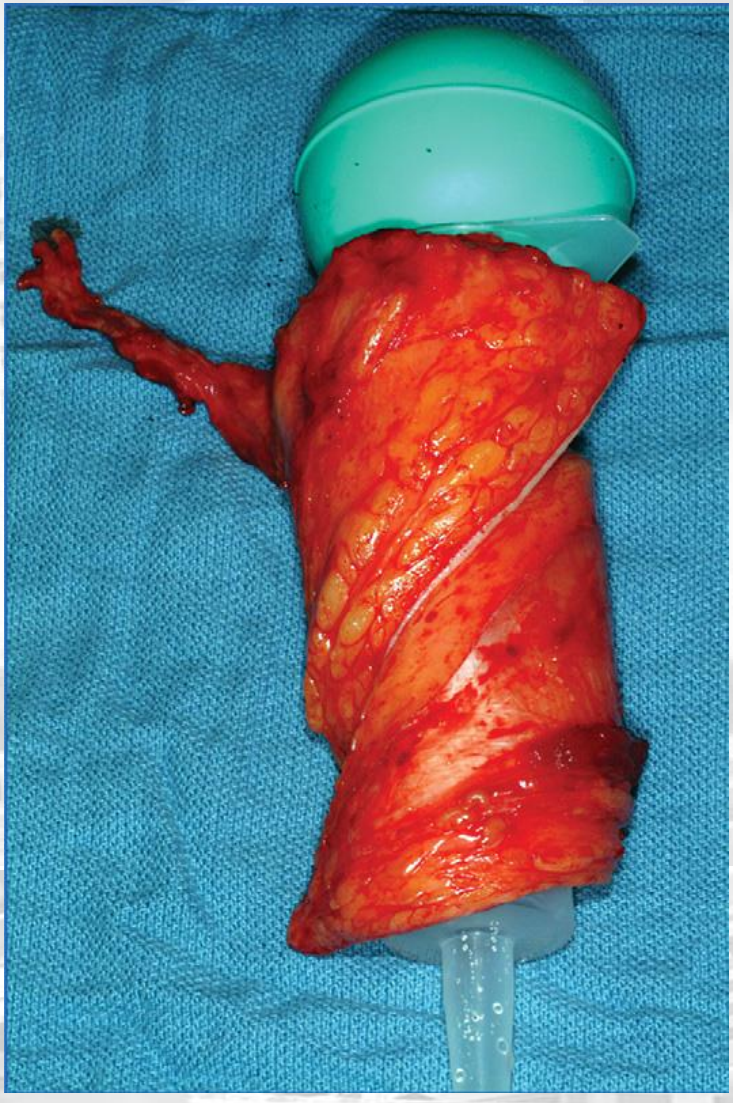
Resection is simple, reconstruction is complex





Jejunal free flap

Tubed anterolateral thigh flap



The Workhorse Flaps

Complications are the rule

- Total operative morbidity of up to 71% and mortality of 3%
- Late complication rate of 26%

The Laryngoscope
Lippincott Williams & Wilkins, Inc.

Morbidity After Flap Reconstruction of Hypopharyngeal Defects

Jonathan R. Clark, BSc(Med), MBBS, FRACS; Ralph Gilbert, MD, FRCS(C); Jonathan Irish, MD, FRCS(C); Dale Brown, MB, BCh, FRCS(C); Peter Neligan, MD, FRCS(C); Patrick J. Gullane, MD, FRCS(C), FACS

Objectives: Laryngopharyngeal reconstruction continues to challenge in terms of operative morbidity and optimal functional results. The primary aim of this study is to determine whether complications can be predicted on the basis of reconstruction in patients undergoing pharyngectomy for tumors involving the hypopharynx. In addition, we detail a reconstructive algorithm for management of partial and total laryngopharyngectomy defects. ***Method:*** A retrospective review was performed of 153 patients undergoing flap reconstruction for 85 partial and 68 circumferential pharyngectomies at a single institution over a 10-year period. There were 118 males and 35 females, the median age was 62 years, and mean follow up was 3.1 years. Pharyngectomy was performed for recurrence after radiotherapy in 80 patients and as primary surgery in 73. Free flap reconstruction was used in 42%, with 30 jejunal, 15 radial forearm, 11 anterolateral thigh, five rectus abdominis, and three gastroomental flaps. Gastric transposition and pectoralis major pedicle flap was used in 14% and 44% of patients, respectively. Morbidity was analyzed according to extent of defect, regional versus free flap, enteric versus fasciocutaneous free flap reconstruction, and the effect of laparotomy. ***Results:*** The total operative morbidity and mortality rate was 71% and 3%, respectively. The most common complications were hypocalcemia in 45%, pharyngocutaneous fistula in 23%, and wound complications in 25%. The late complications were hypocalcemia ($P = .034$), and hypocalcemia ($P = .001$). Pharyngocutaneous fistula was increased in patients undergoing salvage pharyngectomy for radiation failure ($P = .048$) compared with primary surgery. On multivariate analysis, gastric transposition independently predicted for wound complications ($P = .014$) and fistula ($P = .012$). Circumferential defects predicted for flap-related morbidity ($P = .030$), hypocalcemia ($P = .017$), and late complications ($P = .042$). Tracheoesophageal speech was the method of voice restoration in 44% of patients. Oral diet was achieved in 93% of patients; however, 16% required gastrostomy tube feeds for either total or supplemental nutrition. ***Conclusion:*** The operative morbidity associated with pharyngeal reconstruction is substantial in terms of early and late complications. We were able to predict morbidity by defect extent and reconstruction type and initial treatment modality. Swallowing function is acceptable; however, less than half of the patients undergoing pharyngectomy had tracheoesophageal puncture voice restoration.
Key Words: Reconstruction, free flap, myocutaneous flap, squamous cell carcinoma, hypopharynx, pharyngectomy, laryngopharyngectomy.
Laryngoscope, 116:173–181, 2006

INTRODUCTION

The surgery is frought with morbidity

Intraoperative
- Distal extension of tumour
- Prevertebral involvement

Early post-operative
- Hypocalcaemia
- Flap failure
- Salivary fistula
- Major vessel (carotid) rupture
- Wound infection and breakdown
- Chyle leak

Late post-operative
- Stricture
- Tracheostomal stenosis
- Failure of surgical voice restoration

To D'oh or not to D'oh

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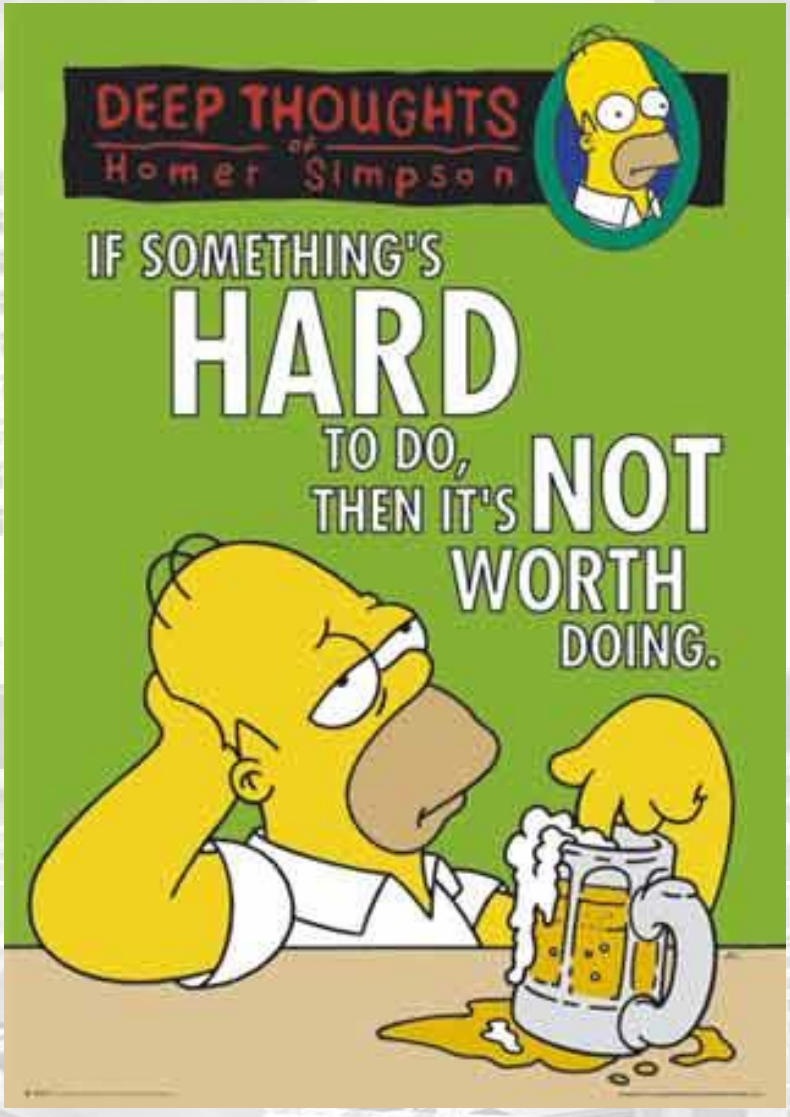


Hypocalcaemia

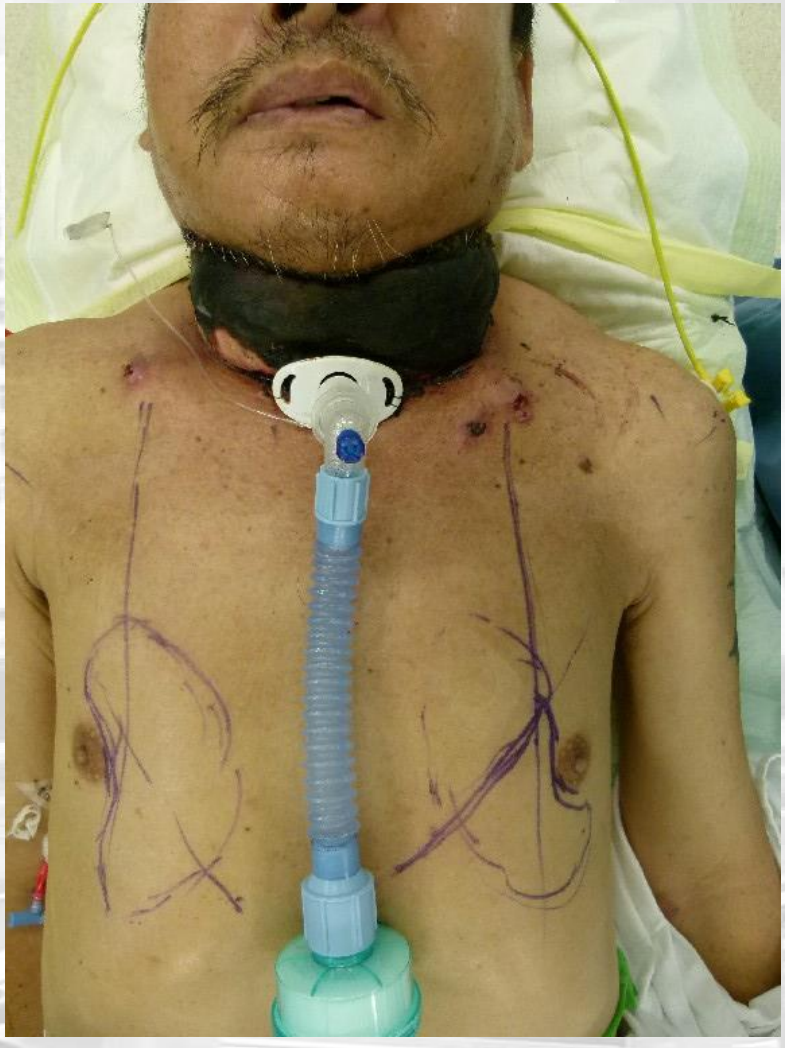
- Hypocalcaemia is due to ablation or ischaemia of the parathyroid glands following paratracheal dissection
- Occurs in up to 44% of patients – commonest post-op complication
- Perioral and distal-extremity paraesthesia are the <u>first signs</u>
- Serum iPTH post-operatively is predictive
- If low, commence calcium supplementation and VitD3
- Enteral supplements are best absorbed ionised in the low pH stomach
- Supplements via jejunostomy are less effective

Flap failure

- Rates of total flap failure are low
- Most are amenable to salvage

Centre	Type	Percentage
Toronto	ALT / Jej	4.7%
Brisbane	Jejunum	3.5%
MDACC	ALT	2%

- Early detection of a compromised flap is key

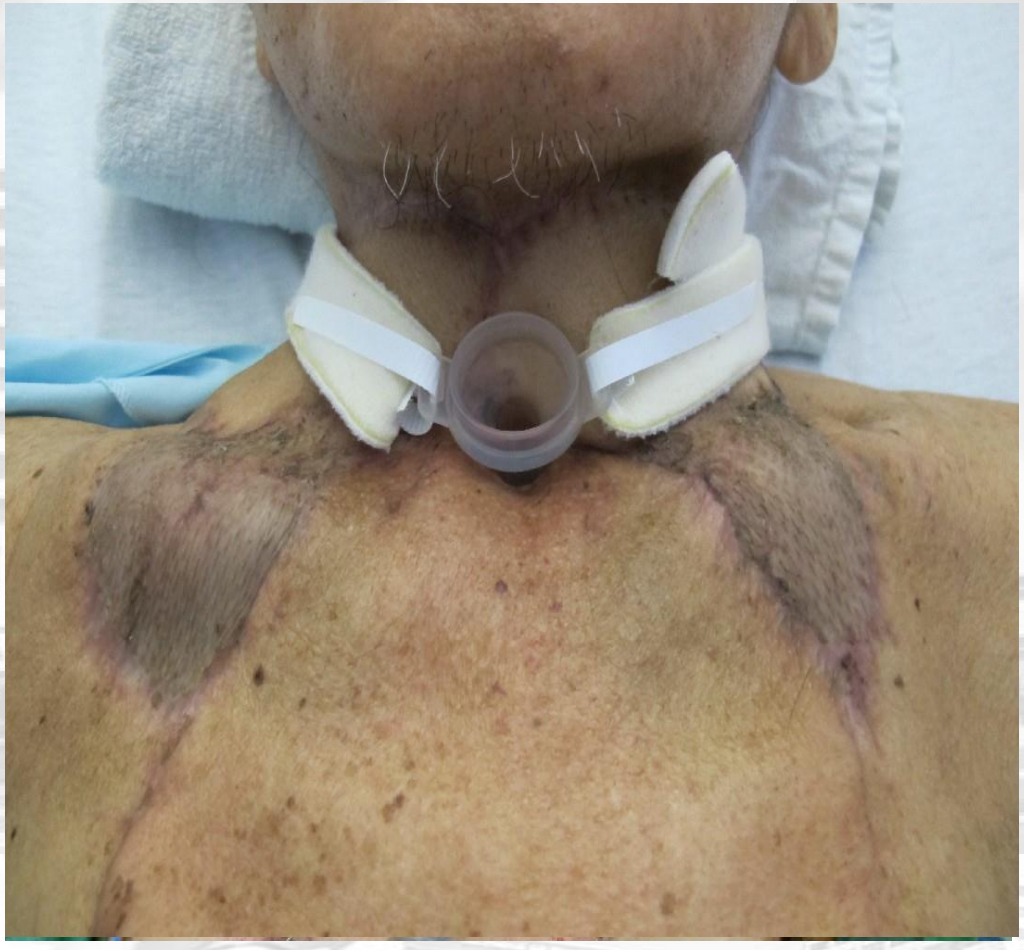


Flap failure

Strategies for avoiding failure

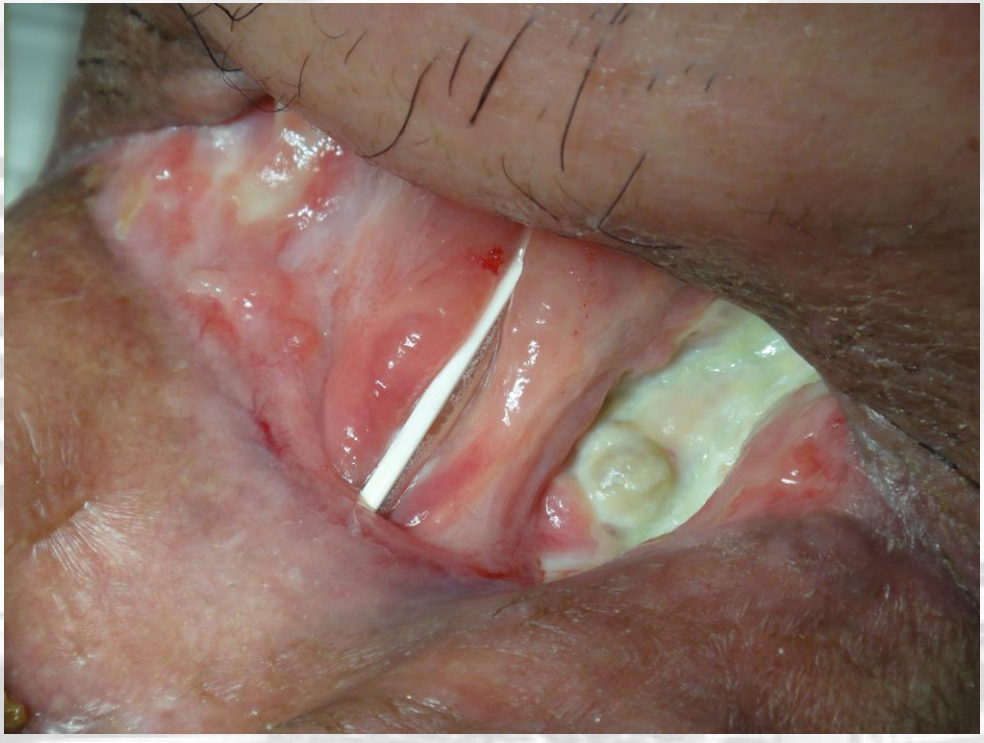
- Optimum haemodynamic management
- Implantable doppler probes
- “Watch window” for jejunum flaps

When recognised and managed early (< 6 hr), 75% flaps can be salvaged



Salivary fistula

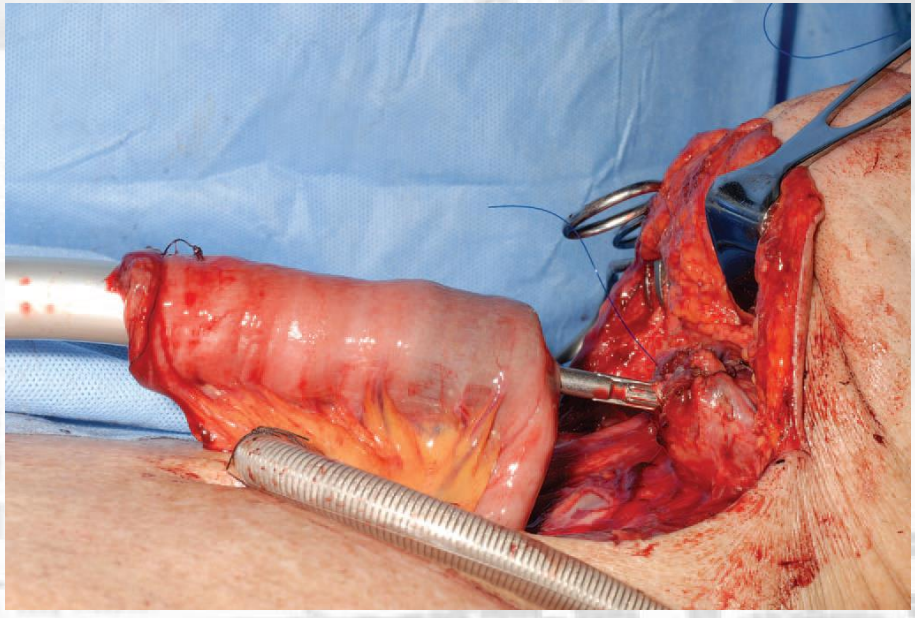
- Rates vary from 5-33% - higher in salvage cases
- Mainly from superior anastomosis
- Heralded by a tense, warm, red skin
- Small leaks can be managed conservatively
- 65% will close spontaneously
- Create a controlled fistula and dress daily until fistula matures



The Wookey procedure may then be employed

Salivary fistula

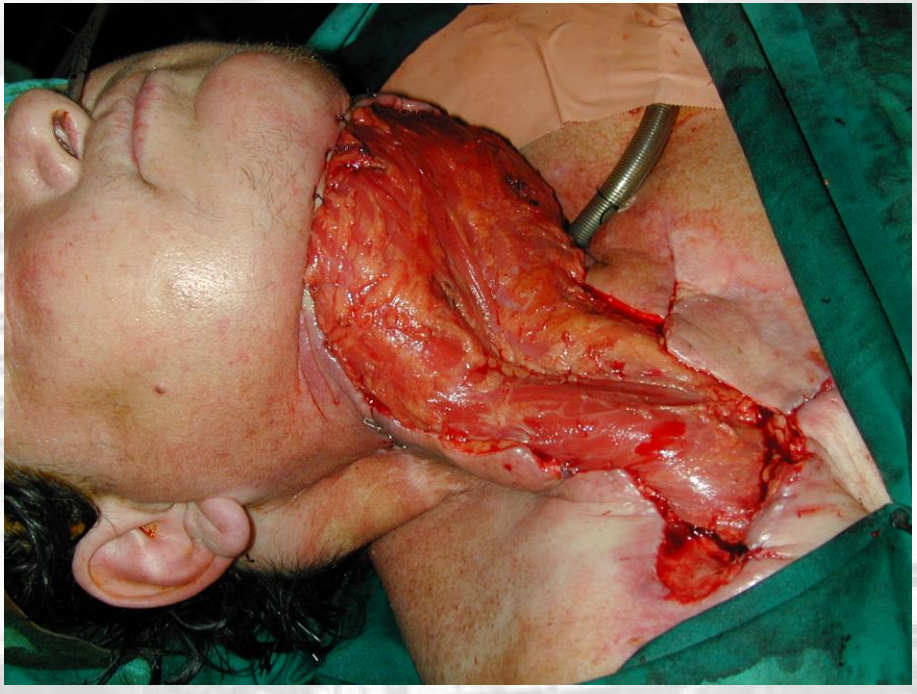
- The use of enteric stapling devices reduces leak rate
- In Charing Cross series, none of the stapled anastomosis leaked



Moradi P et. al. Plast Reconstr Surg (2010) 126: 1960 - 1966

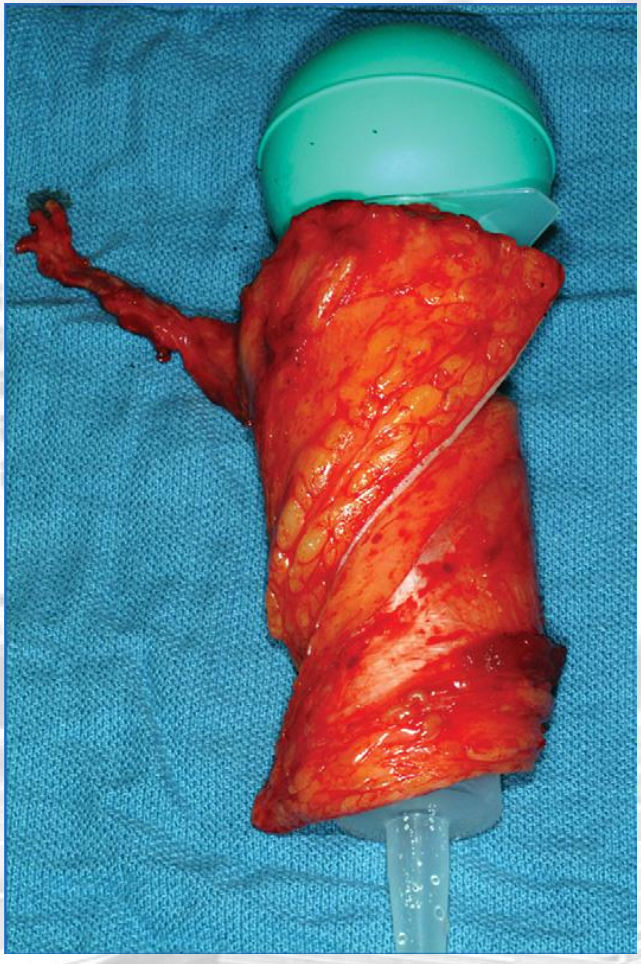
Salivary fistula

- Pectoralis major flaps reduce the fistula rate in salvage cases
- Used to protect both upper and lower anastomosis
- In the Charing Cross series, fistula rate dropped from 7% to 0% using this strategy



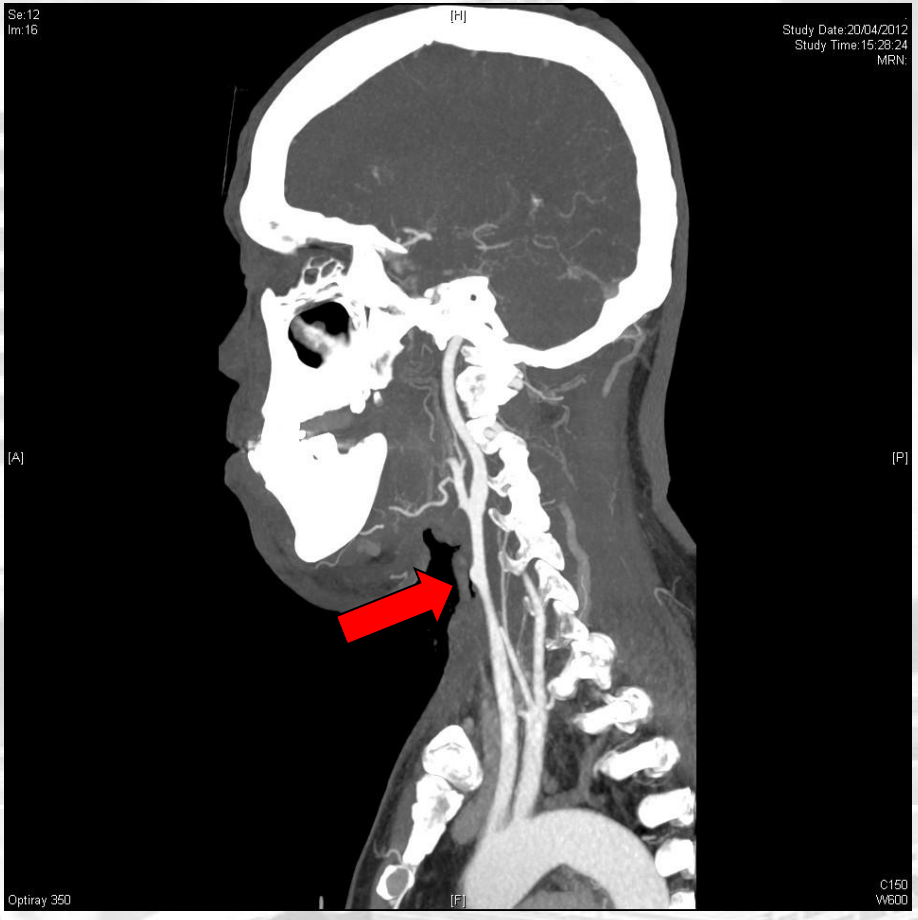
Salivary fistula

- When tubed anterolateral thigh flaps are used, a salivary stent placed for 6 weeks protects the anastomosis
- Stents are sutured to the nasogastric tube to allow for easy removal
- Stents also reduce the stricture rate. In Toronto , this was 18% vs 33% in cases without stent

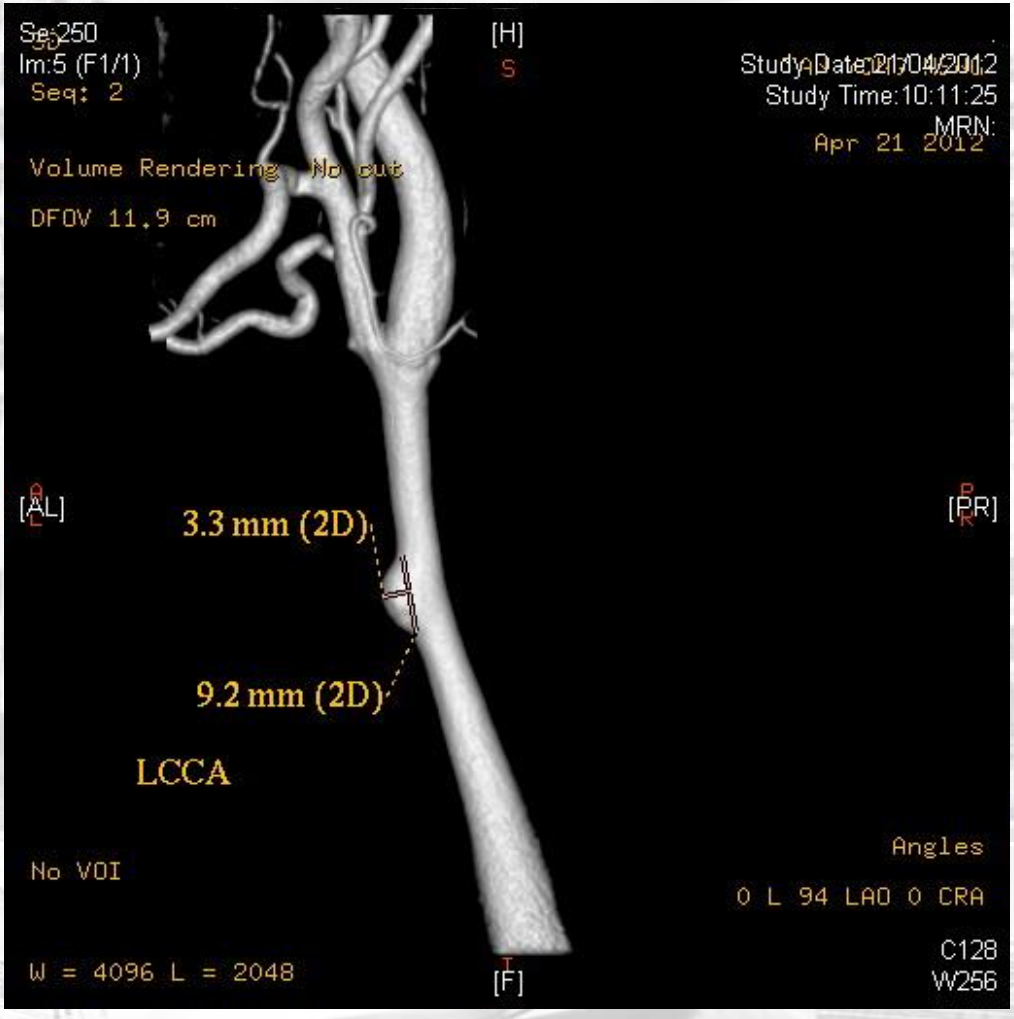


Major vessel rupture

- Carotid blowout is often due to a salivary leak bathing an irradiated carotid that has been stripped bear
- Carotid rupture complicates between 2-5% of cases
- Many cases have a herald bleed
- Ligation of the carotid has a poor outcome

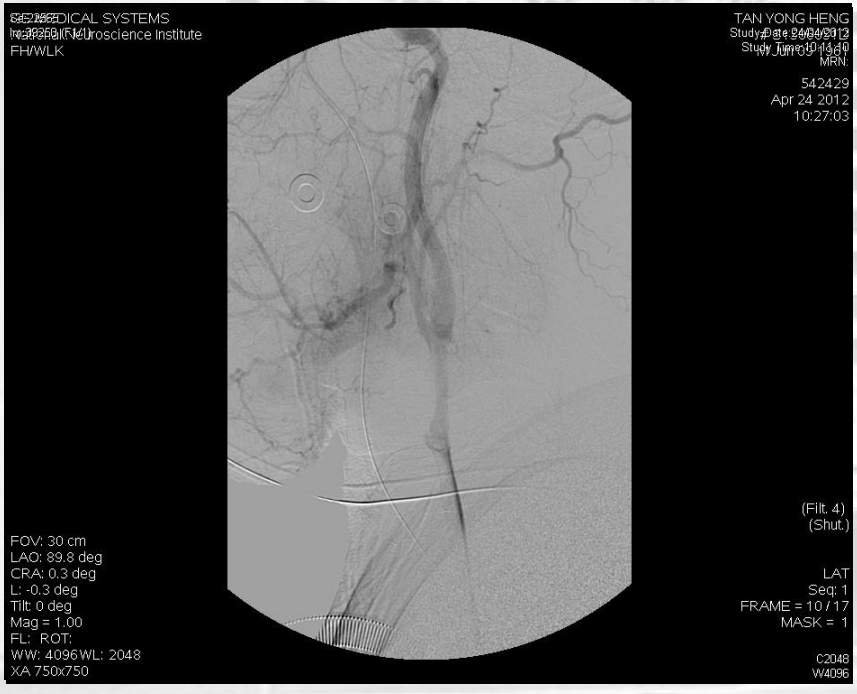


Interventional radiology offers solutions



Interventional radiology offers solutions

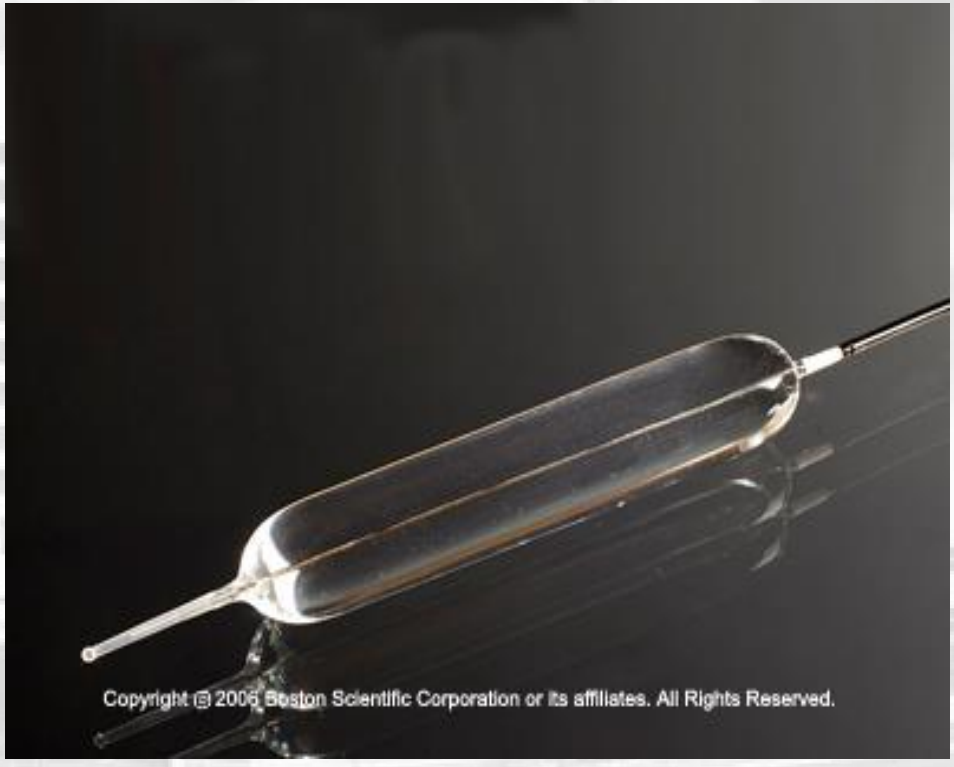
Pre-stenting



Post-stenting

Stricture

- Occurs in up to 15%
- Most commonly at the distal suture line related to ischaemia at the distal flap or proximal oesophagus
- Dilatation with bougies or balloons are often temporary meaures
- Revision with a new free flap is occasionally waranted

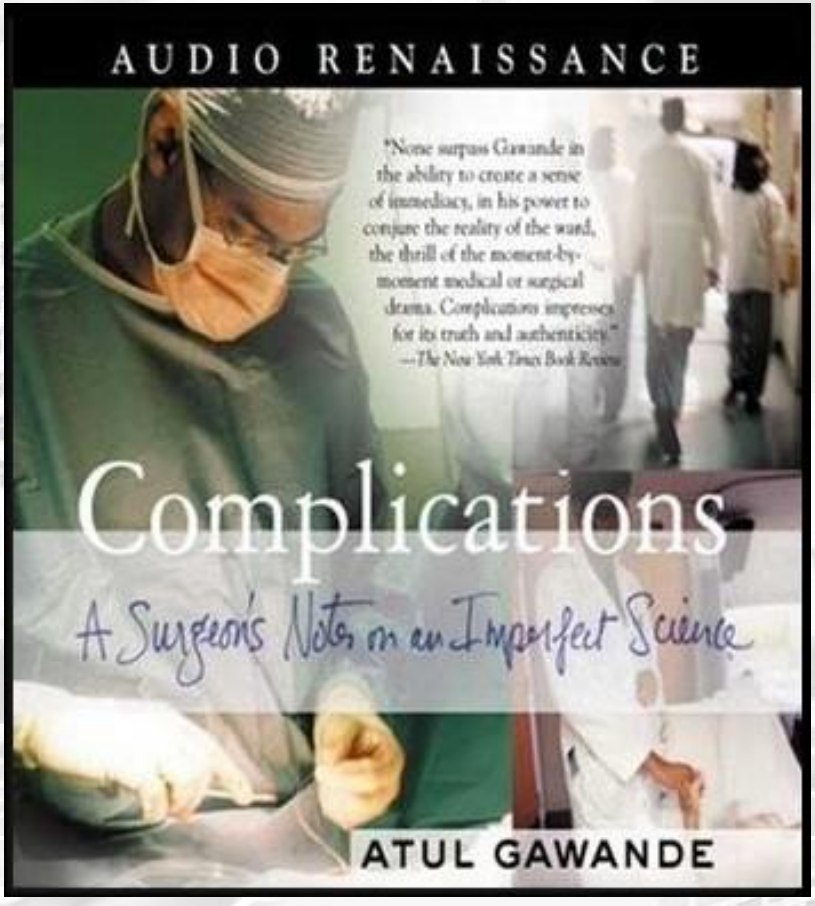


Further reading?

‘There are surgeons who will see faults everywhere except in themselves. They have no questions and no fears about their abilities. As a result, they learn nothing from their mistakes and know nothing of their limitations’

Atul Gawande

Complications: A Surgeon's Notes on an Imperfect Science



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