

JLO Visiting Professor 1998 – Professor Patrick J. Gullane

The 1998 *JLO* Visiting Professor was Professor Patrick Gullane, Otolaryngologist-in-Chief, Department of Otolaryngology, University of Toronto, Canada.

Printed below are abstracts of four lectures given by Professor Gullane during his visit to the United Kingdom and the Republic of Ireland in February 1998

Primary mandibular reconstruction: analysis and concepts

Presented at the Royal Society of Medicine, London on 6 February 1998

The past 15 to 20 years has seen a significant renaissance in the techniques employed to repair both soft tissue and bone defects following ablation for cancer involving the oral cavity.

Reconstruction of the oral cavity is now in its third phase of development. First came the period of local and regional flaps combined with conventional bone grafting. Microvascular surgery raised the curtain on the second phase, which has witnessed the use of more reliable single stage procedures resulting in primary bone and soft tissue healing. The third phase is the result of continuing efforts to improve detailed function with reinnervation and improved aesthetics. An algorithm is presented which attempts to satisfy the optimal form of repair of oral cavity defects following major ablative surgery.

Defects of the oral cavity can be divided into those that involve soft tissue alone, soft tissue with bone and through and through defects. The problems associated with repair include functional sensitivity, cosmetic deformation and a hostile wound following prior irradiation.

The recent HCL classification which attempts to compare mandibular defects is presented.

Requirements for mandibular repair

The tissue type chosen should be strong, well vascularized, capable of shaping and having adequate stock for osseointegration.

Reconstructive options

The many reconstructive options include plate alone, plate with flap, bone only, osseocutaneous free flaps and on occasion multiple flaps.

Composite flaps

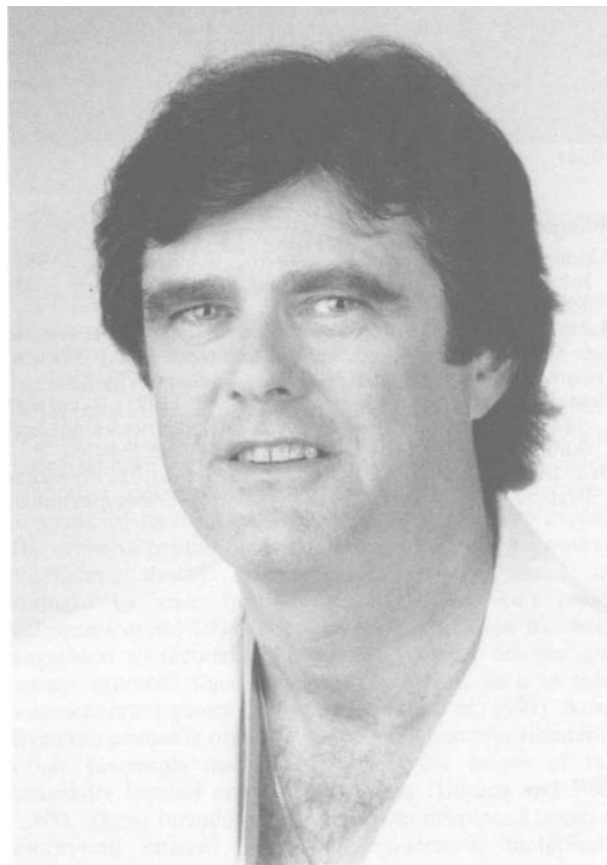
The advantages of the various skin paddles combined with osseous transfer include tissue pliability, bony stock and the potential for neural innervation. Free vascularized bone is now the gold standard in primary repair.

Donor sites

Examples of each of the donor sites including the radius, ilium, fibula, scapula, and plate with flap will be presented.

Complications, limitations and functional results of the various osseocutaneous flaps will be compared.

Finally, the role of plate alone combined with either pedicled myocutaneous or free tissue transfer and the advantages of sensory reinnervation of the tissue transferred will be discussed.



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In summary, therefore, the ultimate free flap is a marriage of skin plus bone with sensory reinnervation. In selecting a donor site morbidity should be minimized and the osseous tissue transfer should have the potential for osseointegration. Older patients and those with a poor prognosis may on occasion be considered for repair with a plate and flap in lateral defects. Distraction osteosynthesis combined with bone producing substances may replace the need for a graft.

In summary some form of primary mandibular repair is, therefore, imperative and with minimum morbidity provides the patient with the best long-term cosmetic and functional results. Secondary oral mandibular reconstructions are less likely to produce the same esthetic and functional results achieved with primary repair. The form of reconstruction should be compatible with both pre- or post-operative irradiation.

Surgical management of subglottic tracheal stenosis including synchronous laryngotracheal reconstruction

Presented to the ENT Society, Dublin on 9 February 1998

Subglottic stenosis is defined as an obstruction lesion in the upper airway lying at a level between the base of the vocal fold superiorly and the lower border of the cricoid

cartilage inferiorly. While the majority of patients have stenosis confined to the subglottis, an increasing number present with synchronous stenosis involving both the glottis and subglottis.

Aetiology

A majority of stenotic lesions in the subglottis are caused by post-intubation injury. However, with the increased use of prolonged translaryngeal intubation in the intensive care units, there is an increasing frequency of glottic and subglottic lesions. A small group of patients however, present with idiopathic subglottic stenosis.

Management

The innumerable approaches to the management are a testament to the difficulty of obtaining predictably or satisfactory results. Management includes endoscopic techniques of dilatation, laser resection laryngofissure and stenting, an ingenious array of plastic reconstructions with or without post-operative stenting and a permanent intubation with either a conventional distal tracheostomy or a silicone rubber T-tube.

Techniques of reconstruction

While many of the known techniques documented in the literature include laryngofissure with stenting, we have found that in the more complex injuries a partial cricoid resection with primary laryngotracheal anastomosis is the most effective and definitive form of therapy.

Clinical experience: Management

Between July 1973 and December 1995 we have accumulated experience with the operation of segmental subglottic resection and primary thyrotracheal anastomosis in 82 consecutive patients with benign disease. In 58 patients, the resection was limited to the subglottic region and a variable length of adjacent trachea. In 24 patients managed by subglottic resection and synchronous laryngoplasty, there was a more complex and combined lesion involving both the glottis and the subglottic segment.

Clinical experience: Results

In 56 patients with isolated subglottic stenosis 56 or 94 per cent of the patients were successfully extubated following circumferential cricotracheal resection with primary thyrotracheal anastomosis. In many instances, the subglottic thyrotracheal anastomosis lay within a few millimetres of the inferior border of the vocal cords. On average the patients had a T-tube in place for four to six weeks. Fifty-six of the 58 patients or 94 per cent have been successfully decannulated.

Synchronous glottic and subglottic stenosis

In 24 patients, more complex lesions involving both the glottis and subglottis were synchronously managed by segmental resection of the subglottis and proximal tracheal airway along with a laryngofissure and some form of laryngoplasty including a posterior mucosal pedicled flap to reline the interarytenoid defect. All 24 patients were managed with a post-operative Montgomery T-tube. Twenty-one of the 24 patients or 87 per cent have been successfully extubated following a period of three weeks to three months of stenting.

Functional results

Patients have been evaluated in four categories both for airway patency and vocal function. Good to satisfactory airways and voice were noted in the majority of patients.

In summary this presentation reviews the management, techniques of reconstruction such as laryngofissure, stenting and endoscopic therapy and the clinical experience July 1973–December 1995 gained with the operation of segmental subglottic resection and primary thyrotracheal anastomosis in 82 consecutive patients with benign disease.

Skull base neoplasms: analysis and management

Presented to the South West Region training day, Bath on 11 February 1998

Until recently, most skull base tumours were considered unresectable and were treated palliatively. The past decade has witnessed tremendous growth in cranial base resection and reconstruction. Advances in pre-operative imaging and intra-operative monitoring and the addition of craniofacial principles to the traditional approach have afforded relatively safe and effective access to neoplasms of the cranial base.

A cranial base lesion is defined as a tumour necessitating a combined intra and extra cranial approach for its ablation. For purposes of presentation the skull base is divided into three regions i.e. Region I tumours involving the anterior cranial fossa, Region II tumours involving the middle fossa and Region III tumours involving the posterior fossa.

Treatment

In general, surgery combined either with pre or post-operative conventional or proton beam therapy has been the management of choice. The advantages of pre versus post-operative irradiation include the lower volume when given pre-operatively compared with the higher volume in the post-operative period. The selection of approach depends on three factors, tumour type, extent of neoplasm and the need for pre-operative irradiation.

Approach to the anterior skullbase (Region I)

The many surgical approaches including degloving with or without maxillectomy or maxillectomy, lateral rhinotomy with or without medial maxillectomy, supra maxillectomy and finally the more subcranial approach recently popularized by Raveh. Examples of the various approaches including a repair of the defects is presented. Reconstruction of Region I defects involves a tight dural seal combined with pedicled pericranial flaps and on occasion a free vascular muscle flap.

Region II neoplasms

The surgical approaches include a bicranial flap combined with a temporal craniotomy or facial disassembly. The need for local and regional flaps will be highlighted.

Region III neoplasms

The many surgical approaches include a temporal craniotomy combined with a neck dissection, parotidectomy and either a lateral, subtotal or total temporal bone resection. Techniques and reconstruction include either pedicled myocutaneous or more commonly free vascularized tissue transfer.

Results

One hundred and twenty-six skull base cases (1982–1995) have been performed. Some 50 per cent of the neoplasms involved Region I. The heterogeneity of the histopathologic types is documented. A complication rate of 40.5 per cent was experienced.

The reconstructive profile shows that 59 per cent of the defects were repaired using a local flap, 16 per cent with a pedicled flap and 32 per cent with a free vascularized tissue transfer. The lowest incidence of abscess, CSF leak, meningitis and hospital stay was noted in patients who had a free flap repair.

Functional status of patients

An analysis of the functional status of the patient population showed that 60 per cent of patients attained normal pre-operative function.

In summary, a 72 per cent disease-free survival at two year and 54 per cent at five years in Regions I and III supports this form of therapy. Free flap reconstruction achieves uneventful primary wound healing in up to 95 per cent of skull base reconstructions. Local flap reconstruction of the skull base when used alone is advocated when there is no dural defect and minimal skin resection or resultant dead space. The pericranial flap provides a reliable and readily available local option for the repair of dural defects either alone or in combination with regional or distal transfer.

Early glottic cancer T1–T2: Surgical salvage of irradiation failures – the Toronto experience

Presented in Birmingham 12 February 1998.

There are several methods of managing early glottic T1 and T2 squamous cell carcinoma which include radiotherapy, endoscopic excision with or without a laser, endoscopic or external cordectomy or some form of partial laryngectomy. All forms of therapy achieve excellent local and regional control.

The purpose of this presentation is to review the salvage operations performed on patients who recurred after the initial treatment with irradiation. In particular, we were

interested in: 1. The ability of partial laryngectomy to control local recurrences. 2. Differences in the rate of successful salvage surgery between patients recurring locally 'larynx' versus with regional recurrence, that is neck metastasis. 3. The ability of secondary surgical procedures to control recurrences if the first attempt at surgical salvage fails.

Of 760 patients treated with primary radiotherapy between June 1980 and December 1989, 131 (17.2 per cent) recurred. Thirteen were judged unresectable and 118 underwent surgical salvage. Information on the type of salvage procedure and outcome was available on 107 patients. The site of recurrence was local only in (90), local and regional (11) and regional only in (six). The initial surgical salvage procedures were partial laryngectomy (27), total laryngectomy (72), cordectomy (one) and neck dissection only (seven). Of the 27 patients undergoing partial laryngectomy, 15 achieved local/regional control and 12 recurred. Of the 12 recurrences after partial laryngectomy, eight achieved LRC with subsequent completion (total laryngectomy). Total laryngectomy as the initial surgical procedure obtained local regional control in 41 of 72 patients. Thirty-one patients recurred following total laryngectomy, subsequent salvage operations were attempted in 12 but only one achieved local regional control. When patients recurred, therefore, following radiotherapy, the prognosis was still reasonable if the recurrence was only local. Poor prognostic factors were regional recurrences (neck metastasis) after radiotherapy and any recurrence after total laryngectomy. If partial laryngectomy failed to control local recurrence, it was possible to obtain local regional control with a total (completion laryngectomy). In patients undergoing total laryngectomy for a local recurrence only there was no benefit to 'a prophylactic neck dissection'.

In summary, this strategy of primary radiotherapy with surgical salvage for failures is as effective as any form of treatment and allows most patients to retain their larynx. Primary radiation with surgery for salvage is highly effective, therefore, for T1, T2 glottic carcinoma and within this large series only 10.7 per cent of the total group required a laryngectomy.