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RESULTS OF ENDOSCOPIC SURGERY AND INTRALESIONAL STEROID THERAPY FOR AIRWAY COMPROMISE DUE TO TRACHEOBRONCHIAL WEGENER'S GRANULOMATOSIS

S.A.R. Nouraei, R. Obholzer, P.W. Ind, A.D. Salama, C.D. Pusey, F. Porter, D.J. Howard and G.S. Sandhu

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National Centre for Airway Reconstruction, Charing Cross Hospital, London, UK

WINNING ABSTRACT: **Background: Upper airway compromise due to tracheobronchial stenosis commonly occurs in patients with Wegener's Granulomatosis (WG). There is at present no consensus on the optimal management of this life-threatening condition.**

Objective: To assess the results of laryngo-tracheo-bronchoscopy, intralesional steroid therapy, laser surgery, and dilatation in managing obstructive tracheobronchial WG.

Methods: Records of eighteen previously-untreated stridulous patients with obstructive tracheobronchial WG, treated between 2004 and 2006 were prospectively recorded on an airway database and retrospectively reviewed. Information about patient and lesion characteristics and treatment details were recorded. Treatment progress was illustrated using a timeline plot, and intervention-free intervals were calculated with actuarial analysis.

Results: There were nine males and the average age at presentation was 40 (16) years [range 13–74]. There were thirteen patients with tracheal, and five patients with tracheal and bronchial lesions. The average tracheal lesion height was 8 (3) mm, located 23 (9) mm below the glottis. There were 1, 10 and 7 Myer-Cotton grade I, II and III lesions respectively. Mean intervention-free interval following minimally-invasive treatment was 26 (2.8) months. Following endobronchial therapy the median intervention-free interval was 22 months ($p>0.8$ vs. tracheal lesions). No patient required a tracheostomy or endoluminal stenting.

Conclusions: Intralesional steroid therapy and conservative endoluminal surgery is an effective strategy for treating airway compromise due to active tracheal and bronchial WG, obviating the need for airway bypass or stenting. We recommend the combination of endotracheal dilatation, conservative laser surgery and steroid therapy as the standard of care for treating airway compromise due to obstructive tracheobronchial WG.

S.A.R. Nouraei
National Centre for Airway Reconstruction, Charing Cross Hospital, London, UK

MY JOB AND THE UNIT IN WHICH I WORK

I am a specialist registrar working at the National Centre for Airway Reconstruction at Charing Cross Hospital, London, UK, as part of the North Thames academic SpR rotation in ENT. We are a multidisciplinary national and international referral unit for the treatment of adult-acquired laryngotracheal stenosis (fig. 1) and treat ~100 new patients per year, which is just over one-third of the national case load of the UK [1]. Early work on treating this condition was undertaken by Mr David Howard in the late 1980s and 1990s as part of his laryngology/head and neck oncology practice. In 2004, Mr Guri Sandhu took over the airway practice and established the National Centre for Airway Reconstruction as a dedicated centre for treating adult laryngotracheal stenosis.

I became interested in airway surgery in 2005 while working as a basic surgical trainee at Charing Cross Hospital and have since, in parallel with my surgical training towards becoming an academic ear, nose and throat surgeon, become extensively involved in the conception, design, conduct and writing of the unit's research work, developing new surgical procedures for treating difficult cases, and adding an objective physiological dimension to assessing the outcome of laryngotracheal reconstructive surgery.

My other research interests include, *inter alia*, reducing complications following major surgery, about which we have recently published a double-blind, randomised, controlled trial investigating the therapeutic potential of remote ischaemic pre-conditioning in major vascular surgery. The trial, whose initial concept and design I proposed as a medical student, showed a 27% absolute reduction in the risk of myocardial injury as well as a significant

STATEMENT OF INTEREST: None declared.

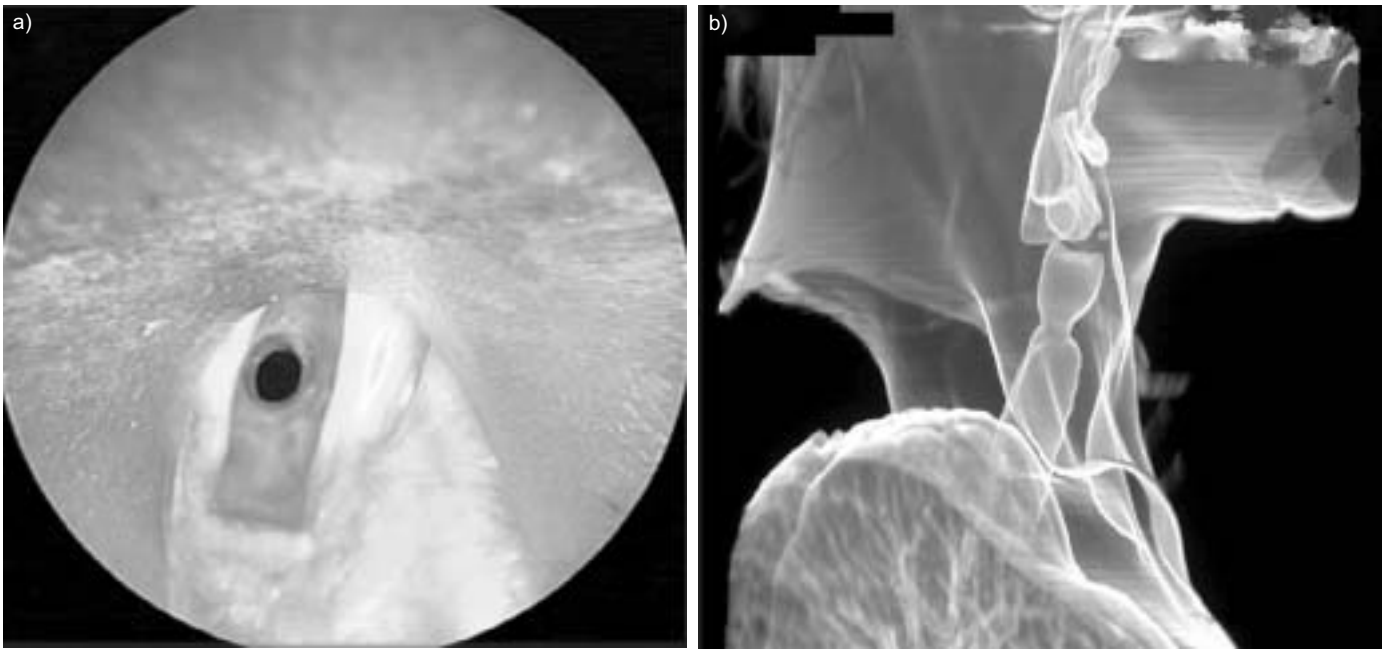

FIGURE 1. a) Endoscopic and b) computed tomographic appearance of adult laryngotracheal stenosis.

reduction in the risk of post-operative renal impairment in patients undergoing open abdominal aortic aneurysm repair [2].

MY WINNING POSTER AS PART OF MY RESEARCH AND MY RESEARCH AS PART OF MY WORKING GROUP/ RESEARCH TEAM

The winning poster was one of a number of clinically orientated research projects conducted at our unit to investigate the efficacy, scope and limitations of minimally invasive surgery as an alternative to first line, open, cervicomediastinal surgery in treating adult laryngotracheal stenosis. The traditional treatment of this condition has been tracheal resection, which, although an effective procedure, is associated with significant morbidity and a small, but notable, mortality rate. Benefiting from advances in shared-airway surgical and anaesthetic techniques, and given the historical development of airway services at our unit as an extension of minimally invasive laser microsurgery for treating laryngeal and hypopharyngeal tumours, we set out to systematically study the role of endoscopic surgery in treating adult laryngotracheal stenosis.

A further consideration in designing these projects was the fact that adult laryngotracheal stenosis is in fact an umbrella diagnosis covering a heterogeneous constellation of very rare conditions (fig. 2), which, although physiologically affect the patient in similar ways, are in fact biologically quite diverse and have different natural histories. We therefore aimed to study each of the main subtypes of adult airway stenosis individually, to identify optimal therapy, 'prognostic' factors for the success of minimally invasive surgery within the main disease subtypes [3, 4], and, for those patients ultimately requiring open surgery, to develop less invasive alternatives to tracheal resection.

A further dimension of my airway research, which is forming the basis of an MD qualification, is investigating the surgical physiology of adult laryngotracheal stenosis. One of the main shortcomings in the field of adult airway restoration has been the absence of objective and scientific measures of outcome. Over the last 3 yrs, we have been able to develop and validate methods and instruments for assessing patient outcome at anatomical [5], physiological [6] and functional [7] levels.

The winning poster was the result of an investigation into minimally invasive treatment of obstructive tracheobronchial

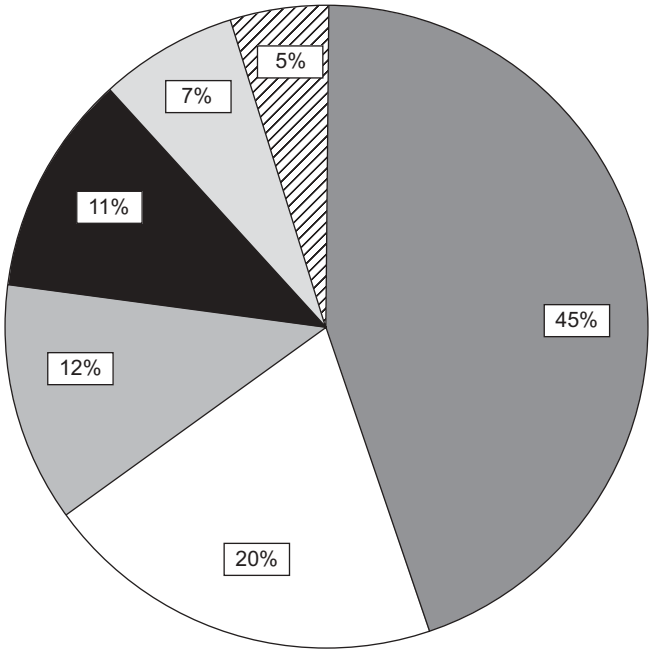

FIGURE 2. Composition of 250 patients with laryngotracheal stenosis treated at the National Centre for Airway Reconstruction (London, UK during 2004–2007). ■: post-intubation stenosis; □: bilateral vocal cord palsy; ■: Wegener's granulomatosis; ■: idiopathic subglottic stenosis; ■: respiratory papillomatosis; ▨: others.

Wegener's granulomatosis leading to acute airway compromise, using intralesional steroid therapy, laser surgery and dilatation.

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