Challenges in septorhinoplasty training before and after the COVID-19 pandemic: A cross-sectional survey

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June 9, 2020

Abstract

Objectives Otorhinolaryngology trainees in the United Kingdom are required to perform ten septorhinoplasty procedures as the main operating surgeon in order to achieve a certificate of completion of training (CCT). The COVID-19 pandemic has profoundly reduced operative opportunities for surgical trainees around the world. Our aim was to assess UK otorhinolaryngology trainees' perceptions of their septorhinoplasty training in the pre-COVID-19 era and frame this within the current training environment brought about by the COVID-19 pandemic. Design Cross-sectional survey. Setting United Kingdom. Participants UK otorhinolaryngology trainees. Main outcome measures Information on trainees' previous operative experience, courses attended, learning materials used and challenges faced gaining septorhinoplasty training was collected. Results 64 trainees responded. All Deaneries and Local Education and Training Boards were represented. 63/64 (98.4%) trainees had operative exposure septorhinoplasty. 60/64 (93.8%) trainees were currently at a trust where septorhinoplasty was performed. A variety of challenges regarding septorhinoplasty training were highlighted, the most common problem being the low number of cases being performed. Nearly one-third (8/25) of ST7-8 trainees in this sample had still not yet performed a septorhinoplasty on at least one occasion even though they were into the final third of their training. Conclusions The COVID-19 pandemic is a new and additional threat to septorhinoplasty training for otorhinolaryngology trainees, particularly those in the final third of the programme. In the short term, clarification is required on what level of operative proficiency is required for a CCT. Longer-term, threats to training can be mitigated by providing cadaveric courses, embracing simulation and considering private sector placements in areas of low NHS volume.

Objectives

Otorhinolaryngology trainees in the United Kingdom are required to perform ten septorhinoplasty procedures as the main operating surgeon in order to achieve a certificate of completion of training (CCT). The COVID-19 pandemic has profoundly reduced operative opportunities for surgical trainees around the world. Our aim was to assess UK otorhinolaryngology trainees' perceptions of their septorhinoplasty training in the pre-COVID-19 era and frame this within the current training environment brought about by the COVID-19 pandemic.

Design

Cross-sectional survey.

Setting

United Kingdom.

Participants

UK otorhinolaryngology trainees.

Main outcome measures

Information on trainees' previous operative experience, courses attended, learning materials used and challenges faced gaining septorhinoplasty training was collected.

Results

64 trainees responded. All Deaneries and Local Education and Training Boards were represented. 63/64 (98.4%) trainees had operative exposure septorhinoplasty. 60/64 (93.8%) trainees were currently at a trust where septorhinoplasty was performed. A variety of challenges regarding septorhinoplasty training were highlighted, the most common problem being the low number of cases being performed. Nearly one-third (8/25) of ST7-8 trainees in this sample had still not yet performed a septorhinoplasty on at least one occasion even though they were into the final third of their training.

Conclusions

The COVID-19 pandemic is a new and additional threat to septorhinoplasty training for otorhinolaryngology trainees, particularly those in the final third of the programme. In the short term, clarification is required on what level of operative proficiency is required for a CCT. Longer-term, threats to training can be mitigated by providing cadaveric courses, embracing simulation and considering private sector placements in areas of low NHS volume.

Key words

SARS-CoV-2; Severe acute respiratory syndrome coronavirus 2; Rhinoplasty; Nasal Surgical Procedures; Otolaryngology; Training; Education

Five Key Points

1. Prior to the COVID-19 pandemic, UK otorhinolaryngology trainees reported several challenges in gaining experience in septorhinoplasty surgery.
2. The main challenge was the limited number of cases being performed at their units.
3. The COVID-19 pandemic is an added threat to achieving the minimum requirements in septorhinoplasty for the award of a Certificate of Completion of Training (CCT).
4. Clarification is required on what level of operative proficiency is required during the training programme and what would be considered a fellowship level of attainment.
5. Threats to training can be mitigated by providing cadaveric courses, embracing simulation, rotating trainees through high volume NHS rhinology placements and considering private sector placements in areas of low NHS volume. Pre-CCT fellowships should be considered for trainees with a specialist interest.

Background

The COVID-19 pandemic

The COVID-19 pandemic has disrupted healthcare systems around the world and has had a profound impact on the delivery of surgical training. Routine elective surgery has ground to a halt in order to prioritise cancer and emergency cases. Rhinology and facial plastics operations have been deemed low priority and are amongst the most likely to be postponed whilst control of the crisis is being obtained.[1]

The SARS-COV-2 virus, responsible for the COVID-19 illness, infects the upper aerodigestive tract, with the highest viral loads occurring in the nasal cavities.[2] The main route of transmission of the virus is via respiratory droplets or contaminated environmental surfaces.[3] There is widespread concern that aerosolised droplets may house viable and infective SARS-COV-2 virus particles although this has not yet been proven. Nevertheless, the balance of evidence indicates that *betacoronaviradae* such as the 2003 SARS coronavirus (SARS-CoV-1) are viable in aerosols.[4]

These two factors combined make rhinology operations high risk for spreading the virus due to their aerosol generating potential. Consequently, an increased level of pre-operative testing and self-isolation is now required by patients undergoing elective procedures.[5] Surgeons are also encouraged to use full PPE for aerosol generating procedures. In general, this refers to either an N95 mask or equivalent, eye protection and a visor, or alternatively a powered-air purifying respirator. Meanwhile, operating teams have been advised to limit the number of staff in the operating theatre to minimize the risk of staff contracting the virus.[6]Where trainees are involved in operations, training has become challenging due to the muffling of voice caused by wearing full PPE.[7]

Septorhinoplasty training for otorhinolaryngology trainees in the United Kingdom

At present, otorhinolaryngology higher surgical trainees (registrars) in the United Kingdom must provide evidence of performing a minimum of ten septorhinoplasty procedures as the main surgeon in order to achieve their Certificate of Completion of Training (CCT).[8]These operations can be completed with their supervisor scrubbed, un-scrubbed but in the operating theatre, independently or whilst training another colleague [Figure 1].

UK trainees in surgical specialties at all levels have reported increasing difficulty obtaining surgical experience. The combined British Orthopaedic Trainees Association/Association of Surgeons in Training survey of over 1600 trainees in 2014, after the European Working Time Directive was implemented, found that more than two-thirds of trainees reported a deterioration in their training, with only 1% reporting an improvement.[9]

It is common knowledge that the National Health Service's funding stream has been under pressure since 2010, during a period of politically induced austerity.[10] The resulting pressure for NHS Trusts to cut costs has meant that some medical procedures are increasingly not being funded, particularly those with an aesthetic element. In 2009, septorhinoplasty was funded in 71/149 (64%) of Primary Care Trusts.[11] The commonest funded indications were airway problems, congenital defects (i.e. associated with cleft lip/palate) or following trauma. Despite nasal trauma rates increasing, one study found a significant increase in nasal fractures amongst females aged 13-20 years between 2004-2009, funding for this procedure is down in many areas.[12]

One of the methods UK trainees use to demonstrate that they have attained surgical proficiency is by completing a workplace-based assessment called a procedure-based assessment (PBA). Achieving a level 4b in a PBA signifies that the trainee is "able to complete the procedure confidently to a high standard, without any guidance or intervention, and is able to anticipate, avoid and/or deal with common problems/complications" [Figure 2]. This subjective definition and arbitrary number required for achieving CCT have caused confusion and frustration in some quarters, as many expert surgeons believe that learning to perform septorhinoplasty well is a lifelong process with a significant learning curve. [13] Despite its limitations the PBA is the main model utilised for assessing surgical competence in UK surgical trainees.[14]

The aims of this study were to assess UK otorhinolaryngology trainees' perceptions of their experience of septorhinoplasty during their training, and to frame this within the current training landscape brought about by the COVID-19 pandemic.

Material and Methods

Ethical considerations

None identified. Replies were anonymous and no identifiable data was collected.

Method

Members of The Association of Otorhinolaryngologists in Training (AOT), which represents Otorhinolaryngology trainees across UK, were sent an electronic questionnaire via its mailing list in March 2019. Answers were anonymous and self-reported. Information on trainees' previous operative experience, courses attended, learning materials used and challenges faced gaining septorhinoplasty training was collected using a mixed method questionnaire. [SurveryMonkey Inc., San Mateo, California, USA. www.surveymonkey.com] demonstrated in Appendix 1.

Results

A Freedom of Information request revealed that 309 UK Otorhinolaryngology trainees started the academic year 2018-2019. 64 trainees responded, giving a response rate of approximately 21%. Of the respondents, 18 (28%) were grade ST3-4, 21 (33%) were grades ST5-6 and 25 (39%) were grades ST7-8. All Deaneries and Local Education and Training Boards were represented. 63/64 (98.4%) trainees had exposure to septorhinoplasty during their training. 60/64 (93.8%) trainees were currently at a trust where septorhinoplasty was performed. Figure 3 depicts the average numbers of procedures trainees had observed or assisted, performed under supervision (trainer scrubbed or un-scrubbed) or performed/trained another. A further breakdown of reported operative experience by training grade is depicted in Figure 4. It demonstrates an improvement in operative exposure and ability with advancing seniority.

The majority of trainees (49/64, 77%) reported a variety of difficulties in gaining experience in septorhinoplasty surgery. These were thematically analysed and could be broken down in to the 6 main themes displayed in Figure 5. It is important to note that 15 (23%) respondents reported no difficulties in gaining septorhinoplasty experience.

40/64 (63%) of all trainees reported going on a dedicated septorhinoplasty training course to supplement their training, rising to 35/46 (76%) for middle and senior level trainees, and 21/25 (81%) of ST7-8 trainees. A small number of trainees (3/64, 5%) reported having a dedicated aesthetic surgery rotation in an NHS setting.

The most popular online resources used by trainees were E-lefent, ENT Masterclass materials, Youtube, Journal of Laryngology and Otology, Rhinoplasty Archive and the UCT VULA open access textbook.

Discussion

The Pre-COVID-19 landscape

Trainees reported difficulty in gaining septorhinoplasty experience, highlighting several reasons. Septorhinoplasty cases were only being performed at certain units, with many other placements offering little or no exposure. The most common hurdle trainees faced was the low numbers of cases coming through their departments. Many blamed reduced local Clinical Commissioning Group (CCG) funding as the cause.

Trainees also reported difficulty progressing from performing the procedure under supervision to performing the procedure independently. Some felt that trainers were reluctant to allow them to perform the whole procedure, siting concerns about the aesthetic and functional outcome, especially in revision cases. Particularly mentioned was nasal tip work.

There was a significant regional variation in the experience gained. Nonetheless, a key finding of this study was that 93.8% of trainees were currently at a hospital where septorhinoplasty was being performed. Trainees in one Deanery reported that septorhinoplasty was not being funded at all in their region, raising concern as to how these trainees would be expected to meet their requirements for CCT. Lastly, competition with fellow otorhinolaryngology trainees was highlighted as another challenge in gaining experience.

Limited opportunities, limited progress

Junior trainees reported low case numbers and blamed limited exposure. This may be due to the nature of specialty training, in which a larger breadth of experience is required early on in the training programme, with more specialist placements typically occurring in the senior years.

Figure 4 shows a trend of improvement in ability with advancing seniority; however case numbers remain low. In this sample, only 5/25 (20%) ST7-8 trainees were on track, or had already achieved, the minimum numbers required for CCT. This suggests that the remaining 20 (75%) will be under pressure to achieve the minimum 10 cases required for CCT within a limited time. In fact, 13/25 (52%) had only managed to perform <2 septorhinoplasty operations. An area of concern was that 8/25 (32%) ST7-8 trainees had still not yet performed the surgery on at least one occasion even though they were into the final third of their training.

Similar trends are seen in the literature. Akin to our study, Masood et al found that ST3-6 trainees showed limited progression in septorhinoplasty during their early training.[15] PBA ratings increased from an average of 2.26 to 2.67 (out of 4) between ST3-6, the lowest rating of the common rhinology procedures measured. Lower PBA ratings at ST6 were found only with stapes surgery (2.00), total laryngectomy (2.43), meatoplasty (2.50) and mastoid exploration (2.60) out of 45 common ENT procedures. It is interesting to note that the aforementioned non-rhinology procedures are now deemed sub-specialist procedures and are no longer required for the award of CCT. Most septorhinoplasties, however, are indicated for the management of common problems such as nasal trauma and airway obstruction and are, therefore, required for pre CCT training.

Post COVID-19 landscape

Pre-COVID-19, trainees reported difficulty building experience in septorhinoplasty. The factors highlighted above will be tough to overcome amidst the uncertain landscape in rhinology following the COVID-19 pandemic. NHS England, with the support of the Royal Surgical Colleges, have produced a clinical guide for surgical prioritisation for all surgical specialties during the COVID-19 Pandemic.[16] As this applies to rhinology, procedures have been categorised into Priority 1a (to be performed within 24 hours – e.g. removal of nasal button battery), Priority 1b (urgent procedures to be performed in <72 hours e.g. uncontrolled epistaxis or sinus surgery with impending catastrophe), Priority 2 (procedures to be performed in <1 month e.g. MDT directed nasopharyngeal surgery for malignancy, MDT directed treatment of sinus cancers), Priority 3 (procedures to be performed in <3 months. e.g. CSF fistula repair or symptomatic mucocoele - threatening sight) and Priority 4 (procedures to be performed in >3 months – all other rhinology procedures). Septorhinoplasty is a Priority 4 procedure, therefore trainees are likely to have their training opportunities further reduced until the resumption of elective rhinology procedures in general.

Implications for future training

It has been suggested that the minimum number of procedures required to achieve proficiency in open septorhinoplasty ranges from 20 to 100 (mean 76.66), and in closed septorhinoplasty from 40 to 200 (mean 106).[16] Repetitive practice is commonly deemed an important factor in progress.[13] This brings about the question of how to improve the quality of surgical experience when overall opportunities are decreasing. Trainees are already supplementing their learning with online materials and a variety of live and cadaveric surgical courses. The future will require advances in simulation techniques in septorhinoplasty.

Inter-regional fellowships or dedicated aesthetics rotations could be built into training programmes for those that wish to pursue rhinology and facial plastics careers so that they can scale the learning curve faster. Some UK Plastic Surgery training programmes include dedicated rotations in which trainees have mixed public and private healthcare placements. This could be evaluated for feasibility in the ENT sphere. Three respondents had completed aesthetics rotations and reported significant operative experience and prowess. Finally, post-exam, pre-CCT fellowships such as the that run by the Training Interface Group or the European Academy of Facial Plastic Surgery fellowship, will be necessary for trainees wanting to achieve significant numbers to achieve expertise. Some Deaneries allow foreign travel to gain further experience however this is not a widespread practice.

With a new training curriculum and assessment methods due to be introduced in 2021, the question must be asked whether assessment for septorhinoplasty should be modified. Achieving 4b in complex septorhinoplasty, for example multiply traumatised nasal bones or revision cases, during the six years of training is impossible, and certainly not after performing only 10 septorhinoplasties. Trainees should be assessed on the basic post-traumatic closed septorhinoplasty that involves septoplasty, osteotomy and hump reduction. Complex cases requiring grafting techniques should be deemed a fellowship level of training.

Conclusion

Acknowledging the inherent limitations of a cross-sectional survey (relatively small number of respondents and responder bias among others) this study provides a snapshot of current training opportunities in septorhinoplasty for otorhinolaryngology trainees in the UK. Our study has found that, in the pre-COVID-19 landscape, trainees reported challenges to gaining sufficient opportunities to achieve the minimum level of skill required to achieve CCT. The quality of experience gained, and competence level attained, was highly variable. Trainees were supplementing their training with online materials, live and cadaveric courses.

In the context of the COVID-19 pandemic, it is obvious that threats to training opportunities in septorhinoplasty surgery are likely to intensify with the introduction of strict peri-operative regimes for elective procedures in the COVID-19 era, especially in the absence of a relaxation on funding rules. Only a quarter of senior trainees surveyed reported that they were within reach of the goal of performing the ten procedures required for CCT. This leaves three quarters seriously under pressure to achieve the minimum number. It is likely that those that have not performed a significant number of septorhinoplasty operations numbers by ST7, and particularly the eight ST7-8 trainees in this sample that had <2 performed operations, will find it difficult to achieve the required numbers in the current climate. Furthermore, trainees in the middle and end stages of their training may only be able to achieve a PBA level 2b, 'guidance or intervention required for key steps only', if the current training landscape persists.

Our evidence points towards an impending crisis in septorhinoplasty experience for senior trainees and highlights the need for an urgent review of septorhinoplasty within the otorhinolaryngology training curriculum. The Speciality Advisory Committee has access to more robust data through the ISCP portfolio and could confirm whether what is reported in this paper is mirrored in trainees' logbooks.

To mitigate against the increasing threats to septorhinoplasty exposure for trainees, consideration should be given to ensuring quality cadaveric courses are available in all Deaneries. Consideration should be given to

possible private sector placements for trainees where NHS opportunities are limited. Trainees and trainers should embrace evolving simulation techniques to ensure maximal benefit is gained from each real-world case performed. Finally, pre-CCT fellowships should be encouraged for trainees with a specialist interest in rhinology and facial plastics.

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Figure Legends

Figure 1. Joint Committee on Surgical Training rules on operative experience for award of CCT in otorhinolaryngology

Figure 2. Breakdown of levels of surgical competence, as defined by the Intercollegiate Surgical Curriculum Programme (ISCP).

Figure 3. Number and type of trainee experiences in septorhinoplasty

Figure 4. Breakdown of trainee septorhinoplasty experience by training grade

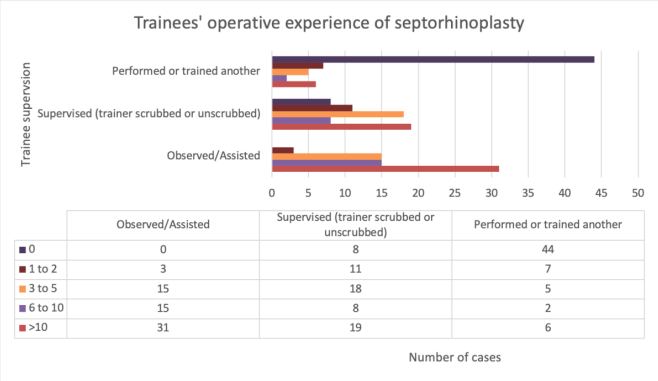
Figure 5. Challenges to septorhinoplasty training highlighted by UK otorhinolaryngology trainees

Operative experience - consolidated logbook evidence of the breadth of operative experience defined in the specialty syllabus	Trainees must be competent in the management of, and procedures allied to, emergency care. Their logbook should demonstrate an absolute minimum as the principal surgeon: • 10 Mastoid operations as principal surgeon (P, T, S-TU, S-TS) • 10 major neck operations as principal surgeon (including all neck dissections, all open malignant head & neck surgery, parotid and thyroid surgery, P, T, S-TU, S-TS) • 10 tracheostomies (P, T, S-TU, S-TS) • 10 Paediatric Endoscopies (including flexible) as main surgeon(P, T, S-TU, S-TS) • 10 Septorhinoplasties as main surgeon (P, T, S-TU, S-TS) • 10 FESS as only scrubbed surgeon (P, T, S-TU) • 10 removal of foreign bodies from airway (including nasal foreign bodies and fish bones) (P, T, S-TU, S-TS) Trainees should have undertaken 2000 operations during the six years of training (as principal or main assisting surgeon) in a training unit with a minimum throughput of 500 operations per annum per higher surgical trainee. Trainees should be able to demonstrate areas of specialist interest by advanced surgical or medical experience in logbook and/or CV. e.g. fellowships (UK or overseas, including interface fellowships), attendance at specialist combined clinics, documented logbook experience of large caseload in chosen area of special interest.

Figure 1. Joint Committee on Surgical Training rules on operative experience for award of CCT in Otorhinolaryngology.

GLOBAL SUMMARY Level at which completed elements of the PBA were performed on this occasion		Tick
Level 0	Insufficient evidence observed to support a summary judgement	
Level 1a	Able to assist with guidance (was not familiar with all steps of procedure)	
Level 1b	Able to assist without guidance (knew all steps of procedure and anticipated next move)	
Level 2a	Guidance required for most/all of the procedure (or part performed)	
Level 2b	Guidance or intervention required for key steps only	
Level 3a	Procedure performed with minimal guidance or intervention (needed occasional help)	
Level 3b	Procedure performed competently without guidance or intervention but lacked confidence	
Level 4a	Procedure performed confidently to a high standard without any guidance or intervention	
Level 4b	As 4a and was able to anticipate, avoid and/or deal with common problems/complications	

Figure 2. Breakdown of levels of surgical competence, as defined by the Intercollegiate Surgical Curriculum Programme (ISCP).



	Observed/Assisted	Supervised (trainer scrubbed or unscrubbed)	Performed or trained another
0	0	8	44
1 to 2	3	11	7
3 to 5	15	18	5
6 to 10	15	8	2
>10	31	19	6

Figure 3. Number and type of trainee experiences in septorhinoplasty

Figure 4. Breakdown of trainee septorhinoplasty experience by training grade

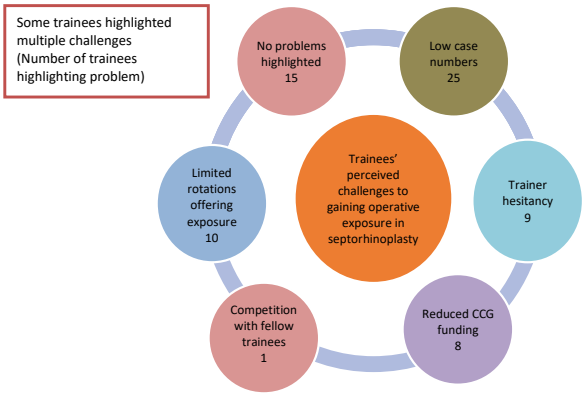


Figure 5. Challenges to septorhinoplasty training highlighted by UK otorhinolaryngology trainees