

REPORT OF HOST INSTITUTE

1. Name of Professor : Professor Mark Remacle
2. Name and Address of Host Institute: CliniquesUniversitaires de Mont Godinne, B-5530, Yvoir, Belgium.
3. Duration of Fellowship: 26/03/2012 to 08/03/2012
4. Brief highlights of the achievements:
 - a) Training: Professor Samir Vinayak Joshi received training in indications, use and complications of LASERS in Airway surgery under my and Professor Lawson's guidance. He also gained experience in use of other Hi-tech equipment like stroboscope, Harmonic scalpel etc. He learnt some new surgical techniques in Laryngology (voice and airway disorders) other than LASERS.
 - b) Research: LASERS and their effect are still under constant scrutiny of researchers. We have an on-going project just started by Dr Vincent Bachy to study fibroblast activity in scar tissue of airway narrowing due to trauma. This project is complimentary to area of work by Dr Joshi i.e. Study of clinical profile of patients of Laryngo- tracheal stenosis. Both these works may be fruitful to the scientific community.
 - c) Administration: Dr Joshi keenly took interest in the Department setup of our super specialty facility which will be useful to him in setting similar facility in India.
5. Your assessment of the ICMR-IF: Dr Samir Joshi is a sincere and hard worker. He is good researcher, a quick learner and an efficient Teacher. I found in him compassion for poor patients and urge of furtherance of scientific knowledge.
6. Any other comments: My Best Wishes are with him for his academic career.

Signature,

Professor Mark Remacle

REPORT

Report on participation of ICMR International Fellow (ICMR-IF) in Training /Research Abroad.

1. Name and Designation of ICMR-IF: **DR Samir Vinayak Joshi**. Professor and Head ENT, BJ Government Madical College, Pune. 411001.
2. Address: B-5, Hirai Niwas, Survey No 54/6A, Near Mahatma Society, Kothrud, Pune 411038.
3. Frontline area in which training / research was carried out: LASERS IN AIRWAY SURGERY.
4. Name and Address of Professor and Host Institute: Prof. Mark Remacle, UCL Mont Godinne, avenue Dr G Therasse, 5530, Yvoir, Belgium.
5. Duration of Fellowship: 13 days.
6. Highlights of the work conducted
 - (i) Technique/ Expertise Acquired:Finer techniques, indications, use and complications of LASERs in Airway surgery. Knowledge of use of Robot Da Vinci in ENT surgery. Different techniques in Head and Neck cancer surgery.
 - (ii) Research results, including any papers prepared/ submitted for publication:
 - (A) Paper Ready to be submitted (either to ICMR , Indian Journal of Otolaryngology or Western India Journal of Medicine) (Copy of Paper attached): A COMPARATIVE STUDY OF DIFFERENCES IN WORKLOAD PATTERN OF DEPARTMENTS OF ENT IN TERTIARY CARE CENTRES IN DEVELOPED VERSUS DEVELOPING COUNTRY. AUTHORS: Joshi Samir and Lawson Georges (Professor of Laryngology, UCL Mont Godinne, Yvoir Belgium).
 - (B) Proposal in Process after sanction of Ethical committee and signing of MOU with Deenanath Hospital, to be submitted to funding agency for approval: A clinical trial to determine efficacy of LASERs and Tracheal Stent in treatment for Laryngo-tracheal stenosis. (Main expenditure involved is purchase of Stents which many of poor patients cannot afford. Cost of each stent Rs 12000/- total expenditure estimate Rs 5 to 6 Lacs).
 - (iii) Proposed utilization of the Experience in India: Practical experience gained in LASERs will be utilized for airway surgeries in India. Purchase procedure started for purchase of diode LASER through Grants received from Central Government for increasing PG seats. Purchase of CO2 LASER proposed. Will try to set Laryngology Sub- specialty in the department.

ICMR Sanction Number: INDO/FRC/452/(S-08)/2011-IHD. Dated: 13/07/2011 and 23/03/2012.

Signature of ICMR-IF

Attachments: 1.Report of Host Institute.

2. Claim sheet, Details form, Utilization certificate.

3. Original documents of accommodation, Surface transport

4. Daily Diary and Copy of Research paper.

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6. Any other comments: My Best Wishes are with him for his academic career.

DEPARTEMENT DE CHIRURGIE

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Professor Marc Remacle



TITLE PAGE

A COMPARATIVE STUDY OF DIFFERENCES IN WORKLOAD PATTERN OF DEPARTMENTS OF ENT IN
TERTIARY CARE CENTRES IN DEVELOPED VERSUS DEVELOPING COUNTRY

AUTHORS

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Letter of copyright

Title of Manuscript: A COMPARATIVE STUDY OF DIFFERENCES IN WORKLOAD PATTERN OF DEPARTMENTS OF ENT IN TERTIARY CARE CENTRES IN DEVELOPED VERSUS DEVELOPING COUNTRY

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The journal may take necessary measures it thinks fit to review and edit this article. The authors further certify that this article has been solely contributed to Journal mentioned and nowhere else.

Signed:

JOSHI SAMIR*

LAWSON GEORGES**

* Professor of ENT, BJ Government Medical College, Pune, India.

** Professor of Laryngology, UCL Mont Godinne, Yvoir, Belgium

ABSTRACT

Manuscript Titled: A COMPARATIVE STUDY OF DIFFERENCES IN WORKLOAD PATTERN OF DEPARTMENTS OF ENT IN TERTIARY CARE CENTRES IN DEVELOPED VERSUS DEVELOPING COUNTRY

Periodic review and comparisons form an essential basis to introspect and to improve upon what one is doing. Presented here is a comparison of laryngological surgical work done at tertiary care hospital in developed country Belgium with surgical work done at a similar sized hospital in developing country i.e. India. The difference in clinical presentations of various diseases was discussed; methods to improve patient care and areas of further research were suggested. Cancer of glottis was found to be a major problem in Belgium. Severe tracheal stenosis was found to be a significant problem in India due to prolonged intubation and vehicular accidents and this problem was not significant in Belgium due to certain patient care measures.

Key words: cancer of larynx, tracheal stenosis, LASER

INTRODUCTION:

It is said that quality is never an accident; it is the result of conscious, collective and affirmative action. Regular comparisons and assessments have to be carried out to adapt new technology and to improve quality of patient care. In one such endeavour we are presenting here a comparative review of surgical work done at Department of ORL a tertiary care centre of UCL Mont Godinne, Belgium; with surgical work done in tertiary care centre hospital, BJMC Pune in developing country like India.

AIMS AND OBJECTIVE:

1. To compare surgical workload in a tertiary care hospital in a developed country with surgical workload in similar sized hospital in developing country.
2. To suggest ways to improve quality of patient care and areas of further research.

MATERIAL AND METHOD:

The Operation theatre data of ENT departments of both the hospitals over a period of one year from April 2011 to March 2012 was collected; tabulated and comparative charts were prepared.

OBSERVATIONS AND RESULTS:

Following are the observations made:

Table 1 showing number of surgeries at department of ORL UCL Mont Godinne, Belgium

Sr No	LARYNGOLOGY	Per Month	Per Year	OTHERS	Per Month	Per Year
1	Thyroid	5	60	BAHA	2	25-30
2	Cordectomy, Arytenoidectomy, Debulking	7	80-90	Cochlear Implant	3	30-40
3	Tracheal Steinosi Reason- Papilloma	1	8 to 12	Cholesteatoma	5	60
4	Tracheal Stent?	1	8 to 12	Otospongiosis	3	30-40
5	Cricopharyngeal Myotomy	3	30-40	Safe ear	5	60
6	Ca Larynx LASER	3	35-50	Sphenopalatine artery ligation	2	20-30
7	Papilloma vocal cords	1	10-15	Rhinoseptoplasty	10	100-110
8	Buccal cancer	1	10-15	Ethmoidectomy	10	110-110
9	Laryngectomy with voice Prosthesis	1	10-15			
10	Maxillectomy	1	10-15			
11	Sleep apnoea surgery	2	20-25			
12	Da Vinci Robot	1	5-10			

	assisted Laryngectomy					
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Major Laryngology Problems in Belgium are as Follows:

1. **Cancer of larynx** incidence is very high due to smoking tendency in general population. It is detected early and cordectomy is done. Cure rate is high upto 70-90% FOR GLOTTIC cancer and 60-70% for supraglottic. Thyroplasties after LASER also give good vocal rehabilitation.
2. **Tracheal Stenosis** and airway stenosis: main reasons at this hospital are Laryngo-Tracheal Papilloma and cancer surgery. Most often the scarring is in glottis and supra glottis regions which is managed by LASER excision. Tracheal scarring also managed by LASER but severe tracheal stenosis is not encountered. Resection anastomosis is never required. Intubation related tracheal scarring is less than 0.5% total causes. Intubation related damage includes cricoarytenoid joint damage and arytenoid subluxation. ICU care and asepsis is of high quality and hence the incidence of tracheal stenosis is less.
3. **Geriatric problems** including dysphagia due to neurological problems is also one of the typical problems common in developed countries tackled effectively by LASERs.
4. **Sleep disorders and viral problems like papilloma** are also common.
5. **Voice disorders are common for professional voice users.**

Table 2 showing the number of surgeries at department of ORL BJMC Pune

Sr No	LARYNGOLOGY	Per Month	Per Year	OTHERS	Per Month	Per Year
1	Thyroid	4	40-50	BAHA	Nil	Nil
2	Cordectomy, Arytenoidectomy, Debulking	Nil	Nil	Cochlear Implant	Nil	Nil
3	Tracheal Steinosis by LASER Reason- Papilloma	Nil	Nil	Cholesteatoma	5	60
4	Tracheal Stent for tracheal steinosis because of road traffic accidents and post intubation at periphery	2	20-25	Otospongiosis	3	30-40
5	Cricopharyngeal Myotomy	Nil	Nil	Safe ear	40	450-500
6	Ca Larynx LASER	Nil	Nil	Sphenopalatine artery ligation	Nil	Nil
7	Papilloma vocal cords	1	10-15	Rhinoseptoplasty	15	150-200
8	Oral cancer	3	30-40	Ethmoidectomy	15	150-200
9	Laryngectomy with voice Prosthesis	1	10-15			
10	Maxillectomy	1	10-15			
11	Sleep apnoea surgery	Nil	Nil			
12	Da Vinci Robot assisted	Nil	Nil			

	Laryngectomy					
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1. Surgeries which require Hi- Tech Equipment like LASER, Robot, Navigation, Cochlear implant and BAHA are not done with BJMC Pune.
2. Oral and Laryngopharyngeal cancer is more common surgery than laryngeal cancer due to habit of smokeless tobacco in Indian population,
3. Surgeries like rhinoseptoplasty, ethmoidectomy and safe ear surgery are done more frequently with BJMC owing to large number of such cases requiring intervention.

DISCUSSION:

1. **Regional difference in disease pattern:** Cancer is a major public health problem world-wide. In 2008 in Belgium 576 new cases of cancer of larynx were diagnosed with an incidence rate¹ of 9.3 and mortality rate of 3.6. Around the same time average annual age adjusted cancer incidence rate in Pune city was 5 and mortality rate is not available². It is clear from the above data that due to habit of heavy smoking in this cold climate of Belgium incidence rate of cancer of larynx is high and it is mainly glottic cancer which is largely curable (70-90% 5 year survival rate) as compared to Supra glottis and Pyriform sinus cancers in Pune (as per our experience) with 5 year survival rate of 40 to 60%. The difference in site is mainly attributable to the pattern of tobacco use i.e. smoking in Belgium and smokeless tobacco in Pune. While deglutition the saliva containing smokeless tobacco slides along aryepiglottic fold, pyriform sinus and stays there for a longer time hence incidence of Aryepiglottic fold and Pyriform sinus cancer is high in Pune as compared to Belgium. The incidence rate for oral cancer is 4.3 in Pune² as compared to incidence rate of 20.7 and mortality rate of 6.6 in Belgium¹. LASERs offer the best cure for the early glottis cancers.

With life expectancy³ of 79.2 yrs and 18% population above 65 yrs Geriatric problems like Dysphagia (non-cancer), Hearing loss, Balance disorders are more common in Belgium than India where life expectancy⁴ is 69.89 years (2009 est.) and only 5.3% population is over 65 yrs.
2. **Airway problems** like tracheal and laryngeal stenosis can wholly be attributed to the different standards of patient care and different disease patterns. As per the hospital statistics of UCL Mont Godinne intubation related tracheal scarring and narrowing is less than 0.5%. Because as per the hospital policy the patients requiring prolonged intubation (>2 weeks) are assessed and per cutaneous tracheostomy is done on first or second or third day without waiting longer. In our experience at BJMC Pune most cases with tracheal stenosis (where management is more difficult than laryngeal scarring) are coming from peripheral district hospitals who are survivors of poisoning. A small number of cases are also due to survivors of bad road traffic accidents; laryngeal scarring due to cancer or radiotherapy is less common than at Belgium where glottis level scarring is more common because of Radiotherapy and partial laryngectomy. Intubation related damage in Belgium includes cricoarytenoid joint damage and arytenoid subluxation which can be considered as acute trauma and is related to circumstances around the time intubation is carried out or technique of intubation.

3. LASERS' COST EFFECTIVENESS IN VARIOUS SURGERIES:

EARLY LARYNGEAL CANCER: Various researchers found no significant differences between Trans oral LASER surgery and XRT with respect to Local Control, Laryngectomy free survival and Overall survival; and no objective differences for voice quality⁵. CO2 laser excision cost \$2407.32/case, generating 1.663 quality-adjusted life years (QALYs). Radiation cost \$4828.79/case, generating 1.506 QALYs. Thus even if the efficacy is same the cost of LASER surgery treatment is significantly lower than radiotherapy.

LARYNGEAL AND TRACHEAL STENOSIS: Laryngeal and tracheal stenosis have been refractory to a wide variety of treatments including dilation, stents, or have required major open operation, *e.g.*, laryngofissure with and without skin or mucosal grafts and segmental resection with larynx release. Adequate airway even when achieved is frequently at the expense of voice quality and significant morbidity or mortality. A highly successful endoscopic technique was described for the treatment of posterior glottic stenosis (apparent bilateral vocal cord paralysis), subglottic stenosis, and tracheal stenosis up to 1 cm thick by Dedo⁶. The procedure involves the endoscopic use of the CO₂ laser, and a micro-trapdoor mucosal flap. Ninety percent of the patients in the group studied obtained an adequate airway with good voice quality and no tracheotomy was required in those patients not already having one. In 19 patients there was no mortality and essentially no morbidity. But the question remains about those patients who have thick scar tissue, loss of mucosa and loss of cartilage. Also cost of repeated LASER surgery is always a consideration in a country like India. Even though LASERs are said to generate lesser amount of scar tissue, healing process takes around 3 months and revision LASER surgeries are not uncommon. The behavior of scar tissue needs further studies. According to some authors⁷ severe tracheal stenosis with tracheal diameter between 2.5 to 5 mm the benefit of LASER surgery lasts for 2 to 4 months exactly the same time as the total time required for healing process. Tracheal stent surgery along with stent costs around \$ 1000 as compared to LASER surgery cost of \$ 2500 and stent left in place for 6 months to 1 year costs less but long term efficacy of stenting after removal has not yet been adequately tested. Also the cosmetic defect associated with carrying the stent in the neck for a long time is a significant problem.

The LASERs certainly are cost effective for diseases like early glottis cancer but it the same is not true about severe tracheal stenosis.

SUMMARY AND CONCLUSIONS:

1. The tertiary care centres in Developing countries like India should acquire technology like CO2 LASER even though it is costly because there is no alternative to it in certain situations.
2. The guidelines for care of patients requiring prolonged intubation should be widely circulated to peripheral district hospitals. Not only guidelines but education through audio-visual aids about long term disastrous consequences of neglected prolonged intubation should be carried out in periphery; as severe tracheal stenosis is an entirely preventable problem.
3. The efficacy of LASERs and Tracheal stents in various situations need further evaluation. Both the procedures being costly need assistance by funding agencies to carry out the research.

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