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Original Research Article

Challenges and advantages of modern rural surgery: an experience of two secondary care centres of rural India

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ABSTRACT

Background: Rural surgery refers to the practice of surgery in rural communities and geographically remote areas, facing multiple challenges like limitation of resources and manpower, poverty, multiple co-morbidities and superstitions. Assam has geographical and population diversity with more than 85 percent of rural population. This study was done to analyse the various challenges and advantages faced during surgical practice in two secondary care centres of rural Assam.
Methods: This is a retrospective study done from 228 cases which were operated in Teok First Referral Unit and Titabor Sub-Divisional Civil Hospital, both secondary care centres of rural Assam, India between July 2022 to August 2023 by a single surgeon. Inclusion criteria were all patients who were operated following written and informed consent. Patients who opted not to operate and pregnant women were excluded from the study. Data collected were placed in charts and tables and statistical analysis done using IBM statistical package for the social sciences (SPSS) statistics version 2.0.
Results: Study population has 46 percent adult male, 51 percent adult female and 3 percent children. 1.3 percent (3 patients) were operated under general anaesthesia, 14.5 under regional anaesthesia and 73.2 percent under local anaesthesia. 11 percent (25 patients) opted not to operate. Challenges were lack of manpower, lack of resources, infection control, fatigue, trust issues and socio-political pressure. Advantages are financial relief, homely environment, better diet and care, community support, avoiding unnecessary referral and better follow-up.
Conclusions: Rural surgery can be a boon to modern healthcare if available resources and manpower are properly managed and challenges are overcome.

Keywords: Limitation, Superstitions, Resources, Pressure, Environment

INTRODUCTION

India is a low-middle income country, having a rural population of 68.8 percent.[1] As per 2011 census, North-east India has a total population of 45 million people with an estimated rural population of 81.5 percent.[2] For Assam, the rural population is 85.92 percent.[3] Rural surgery refers to the practice of surgery serving people in rural communities and geographically remote areas. Rural surgery faces multiple challenges like limitation of resources and manpower, poverty, multiple co-morbidities and superstitions.[4] The operative experience of surgeons working in rural areas is much different from that of surgeons operating in urban areas. Surgeons working in such resource-limited hospitals often need to provide care outside the expected scope of surgical training, exposure and expertise.[5] Access to surgical services in rural areas is particularly low and this contributes to the increased morbidity and mortality. Geographically isolated patients may be unwilling or unable to travel for specialty care. These same patients also present with life-threatening

emergencies beyond the typical spectrum of a general surgeon's practice, in hospitals with limited professional and material support.[6] The following study was done with an aim to evaluate the roadmap for providing surgical care to the people in remote and geographically underprivileged areas with the following objectives: to find various challenges that obstructs delivery of quality rural surgical service; and to evaluate advantages that rural surgery can provide to the people if these challenges are overcome.

METHODS

This was a retrospective observational study done for a period of 14 months between July 2022 to August 2023 from 228 cases which were operated in Teok First Referral Unit and Titabor Sub-Divisional Civil Hospital, both secondary care centres of rural Assam, India. All the cases were operated by a single Surgeon and the local anaesthesia was given by the surgeon himself. General and regional anaesthesia were given by a single anaesthesiologist.

Inclusion criteria were all patients who were operated following written and informed consent for surgery following pre-operative check-up and counselling. Patients who opted not to operate and pregnant women were excluded from the study.

Every patient was followed-up twice for cases operated under general and regional anaesthesia, first at 2-weeks and second at 6-weeks post-surgery. For cases operated under local anaesthesia, follow-up is done once at 2-weeks post-surgery. Data collected were placed in charts and tables and statistical analysis done using IBM statistical package for the social sciences (SPSS) statistics version 2.0.

RESULTS

Study population has 46 percent adult male, 51 percent adult female and 3 percent children below 18 years (Figure 1). Out of all 228 cases, 1.3 percent (3 patients) were operated under general anaesthesia, 14.5 under regional anaesthesia and 73.2 percent under local anaesthesia. 11 percent (25 patients) opted not to operate (Figure 2). Out of all 217 cases operated, 98 were emergency procedures and 119 were elective procedures.

The different emergency procedures performed were orchidectomy and orchidopexy for testicular torsion; fasciotomy for limb compartment syndrome; inter-costal water seal drainage for pneumothorax and haemothorax; open appendicectomy; Lords' plication for pyocele for testis; incision and drainage of abscess including breast abscess; removal of foreign body; primary repair of wounds; venesection; suprapubic cystostomy and close reduction of fractures (Figure 3).

The different emergency procedures performed were open appendicectomy, open hernioplasty, Jabouley's procedure, excision of lipoma, sebaceous cysts, breast lump etc; circumcision; skin grafting; peri-anal Fistulectomy; suprapubic cystostomy; rhomboid flap for pilonidal sinus and repair of wounds (Figure 4).

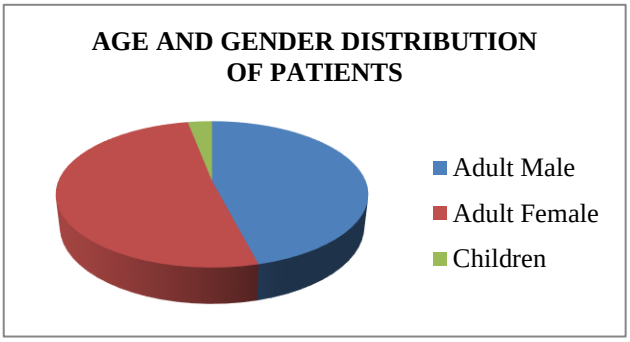

Figure 1: Age and gender distribution of the study population.

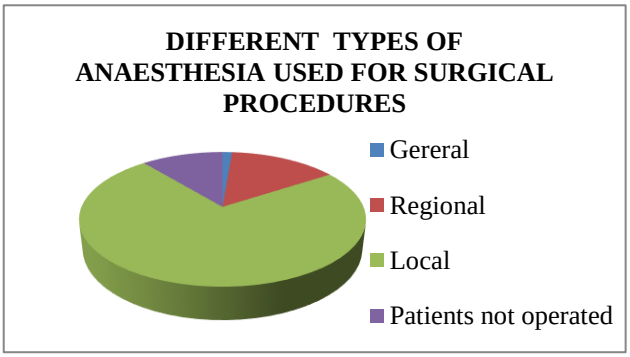

Figure 2: Different types of anaesthesia used for surgical procedures.

There were no significant post-operative complications except one patient having surgical site infection after undergoing emergency open appendicectomy.

Various challenges that were found were lack of manpower and resources, infection, fatigue, trust issues and social pressure. Lack of manpower is the most significant hindrance towards success of rural surgery. It includes unavailability of a second surgeon; absence of regular anaesthesiologist and specialists from other related departments like radiologists, histopathologists, and cytologists; semi-trained support staff with significant lack of staff. Lack of resources includes lack of operative and critical care instruments, post-operative wards and critical care units, diagnostic equipments, medicines and operating materials and infection control items. This exposes the surgeon to significant helplessness in getting proper diagnosis and pre-operative preparation, intra-operative and post-operative management and critical care, preparation and assistance inside and outside the operation theatre and proper post-operative recovery of the patient. Though the govt. aided centralised diagnostic and referral system and medicine and equipment facilities has reduced the lack of resource to a significant extent, but a lot more is needed to be done.

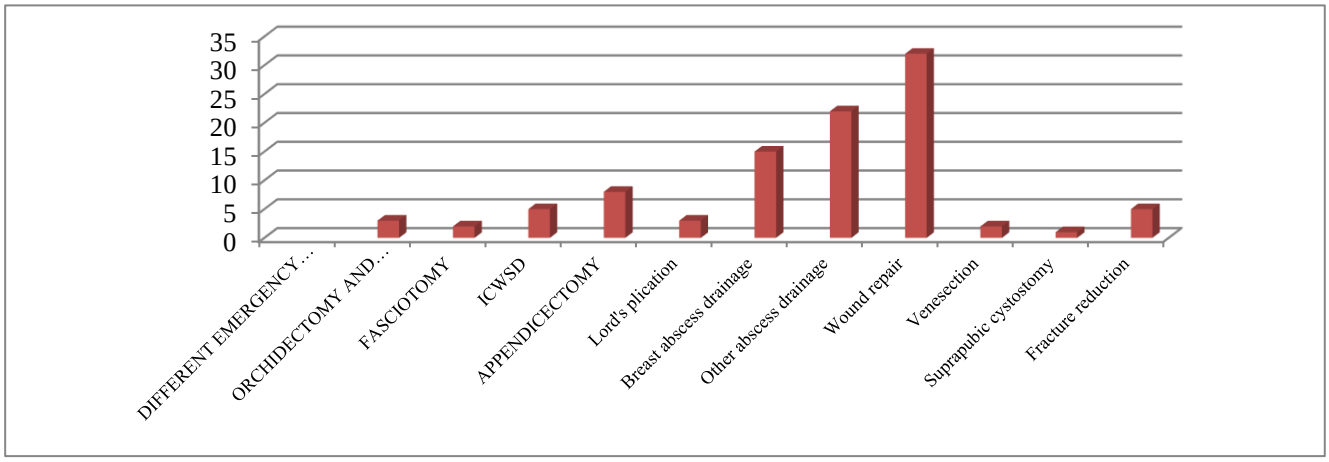

Figure 3: Different emergency procedures performed.

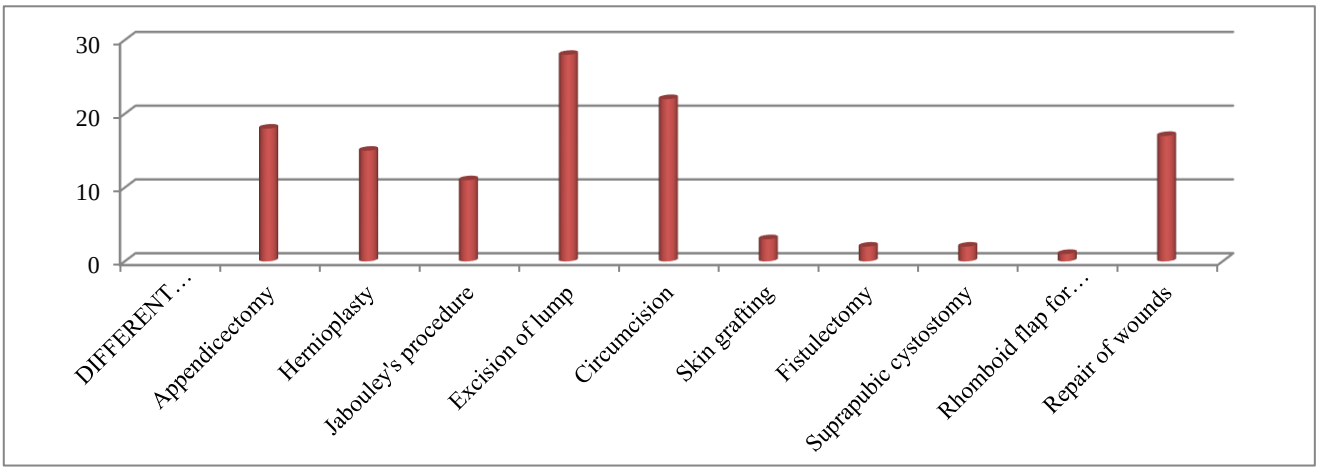

Figure 4: Different elective procedures performed.

Infection control is another important challenge which leads to delayed post-operative recovery and increased post-operative complications. This will lead to trust issues in the doctor-patient relationship and will increase hindrance among patients in availing the facilities available in the local hospital. Social and professional pressure towards providing round the clock facilities leads to significant fatigue and hence will reduce the output in patient care.

Despite having various challenges, rural surgery has a lot of advantages. The patient in rural hospitals can have a more direct contact with the surgeon and it helps in a significant development of a good doctor-patient relationship. Undergoing surgery in a community hospital provides a patient with a homely environment, better diet and care, community support and better follow-up. This will help in enhancing better post-operative recovery and early return to normal work. This will help in avoiding unnecessary referral and in financial relief to the patient and family. It will also reduce the burden of the referral healthcare institutes.

Another advantage of rural surgery is maintaining the quality of surgical care due to lack of a significant patient load which leads to better use of resources and adequate attention to each patient.

DISCUSSION

The study conducted by Shively et al concluded that rural general surgeons face multiple challenges such as lack of broad-based training and adequate financial support, increased expenses, increased workload and specialization with increased technology, ageing and lifestyle issues leading to decreased interest in surgery, decreased reimbursement and increased expectations of the general public. They suggested solutions such as dedicated training programs for rural surgeons, good network with tertiary care hospitals, equal pay and regionalization of rural surgical centers with multiple surgeons so the lifestyle issues can be addressed.[7]

The findings of this study was again confirmed by the study conducted by Glazebrook et al which further concluded that the difficulties faced by rural surgeons in maintaining advanced professional skills and balanced

personal life can be addressed by increased support for continuing medical education and professional development as well as adequate pay with better housing and educational facilities for the family.[8]

But the study conducted by Heneghen et al concluded that age differentiation is not significant among urban and rural surgeons. But the difference lies in that rural surgeons perform a variety of operations, mostly in adverse professional conditions and with less financial support whereas surgeons working in urban areas gets more facilities for professional development and good quality of life.[9]

Another study conducted by Kim et al concluded that the opinion, expertise and experience of rural surgeons should be harnessed to make global surgery more inclusive as they apply creative and more practical solutions for addressing barriers to quality patient care in low-resource settings.[10]

The study conducted by Upadhyayula et al concluded that difficulty in retaining specialists with lack of resources and training and lack of adequate transport facilities are the barriers to successful outcomes in rural neurosurgery. The study suggested that advances in telemedicine with adequate transport facilities to tertiary care hospitals, mobile neurosurgery, training programs and technological advances for urgent operations will be some of the adequate solutions to address these challenges.[11] The study conducted on challenges in burn care by Chamania et al confirmed that the findings of previous study is also applicable regarding management of burn patients in the rural region and early transfer to appropriate facility for those requiring specialised attention.[12]

The study conducted by Johnson et al evaluated the opinion of rural surgeons regarding the quality of healthcare systems and its influence on postoperative care. Participants have a mix opinion regarding community and financial support. They also commented that lack of proper training and equipment support with financial disparities are the barriers to a good rural surgical facility.[13] Another study conducted by Green et al suggested that postings on rotation for medical students at rural hospitals will create a bridge of communication among the rural surgeons and the students and will encourage the latter to take up rural surgery as their career in future.[14]

In the study conducted by Sarap et al, it is suggested that strategies such as structured training programmes for surgeons with a rural interest and collaboration with urban and academic healthcare institutes and good financial support to the rural surgeons to increase the specialist manpower in rural surgery.[15] This will also help to replace and augment the ageing rural surgeons who have to shoulder the majority of the burden in rural areas as concluded in the study conducted by King et al. In this study, they found that number of general surgeons practicing in rural communities is decreasing at an annual rate of 0.5 to 1.0 percent approx. Moreover, entry of younger general surgeons of less than 35 years of age into rural healthcare centres (8.7 percent) was less than that in urban regions (12.1 percent). The study also suggested for enhancing the skills of rural general practitioners in essential surgical care.[16] A failure to take an appropriate action in this regard will have a negative impact on the health status of rural communities.[17]

The study conducted by Humber et al in British Columbia concluded that a holistic approach to community patient care by addressing emotional, psychological and cultural needs of patients along with the physiologic needs of surgery will make rural surgery accessible to more and more patients from the community. The study also suggested for larger studies to clearly evaluate all of the needs of surgical patients and allow health care administrators and policy-makers to more effectively plan surgical service delivery in rural areas.[18]

Another study conducted by Georgeades et al identified four thematic domains of paediatric surgery in rural areas accessing surgical care which includes difficulties with referral processes and travel/lodging burdens; surgical care processes which involves treatment details and provider/hospital expertise; resources for navigating care which includes families' employment status, financial burden, and technology use; and social support which includes family situations, emotions and stress, and coping with diagnoses. A balance of all these domains is important towards success of paediatric surgical care.[19] In this regard, a strong referral system and a good relationship between urban and rural hospitals also play a pivotal role.[20] Use of modern technology such as laparoscopy is also a boon towards success of modern rural surgery.[21]

Management of co-morbidities and complications is a challenge in rural surgery and among all the complications, surgical site infection (SSI) is the most common complication. Preoperative morbidity, smoking, blood transfusions, higher ASA class, use of drains, prolonged operative time, contaminated or dirty wound class, and emergency surgery were significantly associated with superficial SSI. Better preoperative optimization of comorbidities, quality healthcare, and robust surveillance is needed for SSI prevention and management in rural setting.[22]

The study conducted by Bhatia et al evaluated the surgical and trauma care capacities at healthcare facilities in Haryana, India. The study showed shortage of surgical resources at lower-level centers. Specifically, the primary health centers were not operating at full capacity. These results suggested for resource allocation, including increasing education, across different facility levels in rural India.[23]

CONCLUSION

Rural surgery is a tough and challenging situation for any Surgeon due to amalgamation of multiple adverse factors

including lack of manpower and resources, infection control, community and social pressure, financial and lifestyle challenges and lack of adequate training and exposure. If these challenges can be overcome, then rural surgery will be a boon for community healthcare with the multiple advantages that were evaluated and found in this study.

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