

# Spectrum of Anesthetic Services Provided at a District Hospital in North India: A Retrospective Observational Study

Vipan Garg<sup>1</sup>, Anju Bala<sup>2</sup>, Kuldeep Chand Vatsyan<sup>3</sup>

<sup>1</sup>In-charge Anesthesiology and Intensive care, Regional Hospital Bilaspur (HP)

<sup>2</sup>Junior Resident Pediatrics, DRPGMC Tanda

<sup>3</sup>Senior Resident Orthopedics, SLBSGMCH Nerchowk

Corresponding Author: Anju Bala

## ABSTRACT

**Background:** Anesthesiology is a highly specialized field of medicine which determine the provision of surgical procedure and intensive care delivered at an institution. These services providers are preferably termed as perioperative physicians who not only provide the safe anesthetic services but also provide optimal perioperative hemodynamics which affect the post-operative outcome. In modern era of highly specialized computerized machine and better perioperative monitoring devices, anesthesia have become very mush safe. Availability of such high-end gadgets is not easy in rural settings as they are very costly. This study aims at analyzing the spectrum of anesthetic services provided in a rural setting hospital and scope of improvement in providing better perioperative care and safe anesthesia.

**Methods:** This retrospective study is conducted between June 2019 to May 2020. We used operation theatre records to analyze different kind of anesthetic services delivered in the mentioned period for various surgical procedures.

**Results:** This government running rural setting hospital with a single operating table had delivered anesthetic services to total of 873 major surgical procedures in the mentioned period of study. Out of these 225 were emergency and rest were elective procedures. Sub arachnoid block (SAB) was given in maximum number of patients followed by Peribulbar block and general anesthesia. Regional blocks were also practiced here using land mark techniques.

**Conclusion:** Setup of a single anesthesia workstation with only basic hemodynamic monitoring delivering variety of anesthetic services. In rural setting with high load of poor patients these services need to be delivered in more volume. Single operating table and anesthesia workstation is a major drawback in delivering these services though variety of services delivered as per gadgets available is remarkable.

**Key words:** General anesthesia, Sub Arachnoid Block, CSE

## INTRODUCTION

The global burden of disease which is surgically correctable is 28-32%<sup>1-3</sup>. The role of surgeries is well established<sup>4-5</sup>, still approximately 5 billion human beings don't have timely access to surgical facilities<sup>1-3</sup>. The delivery of surgical services largely depends upon anesthetic services provided in hospital. The delivery of anesthetic services depends upon the infrastructure of operation theatre, availability of anesthesia equipment, drugs and manpower. These limiting factors curtail the variety of anesthetic services provided in a hospital. Most commonly used anesthetic methods like GA, SAB and CSE are common choice of anesthetist in any setting. The availability of key medications in the anesthesia workspace (e.g., succinylcholine, propofol, and vasopressors) is essential to patient safety in the operating room<sup>6-9</sup>. However, significant inter-provider variability exists

in the preparation and storage of these medications, even within institutions<sup>10-11</sup>. Use of newer equipment and techniques make anesthetic practice safer. Availability of Point of care ultrasonography (POCUS)<sup>12</sup>, advanced hemodynamic monitors (Flotrac)<sup>13</sup>, low flow anesthesia<sup>14</sup> with advanced workstation adds more safety to anesthetic practice. This study was conducted in a rural setting secondary health center with single operation theatre table facility. Equipment available were all basic for GA and SAB. Dragger fabius plus workstation is used in the operating rooms with ASA standard monitors in every case (Image-1). There is no provision of POCUS, Flotrac, fibreoptic and video laryngoscope. No advanced hemodynamic monitoring is available for high risk cases. This study aims at studying anesthetic services provided in such basic resource setting and to find out ways to improve anesthetic service delivery.

## METHODS

This retrospective observational study was conducted in period between June 2019 to May 2020 in District Hospital Bilaspur (H.P.). This hospital caters a population 3.82 lakh and is the only government run institution in the region where surgical services are provided under different departments. Surgeries were

conducted in the field of General Surgery, OBG, Orthopedic, Ophthalmology, ENT and urology. There is only one operating table which is shared by all specialties on day to day basis. Data was collected from Operation theatre records to analyze the surgeries conducted by different department. This data is arranged in term of type of anesthetic service delivered to provide optimal perioperative safety to patients. Approval from Institution for analyzing the data was taken.

## ANALYSIS AND RESULTS

There were 873 major surgeries conducted in the study time frame. Out of 873, 225 were operated in emergency and rest were elective procedures. Among the anesthetic delivery, services were GA, SAB, CSE, brachial plexus block, ankle block, axillary nerve block and Peribulbar block. Among these, SAB was given in maximum number of patients (361) out of which 49.5 % in emergency. This was followed by Peribulbar block (272). GA was given in 168 patients, out of which 14.8 % were emergency cases. Among nerve blocks Supraclavicular Brachial plexus blocks is given in 44 patients using landmark technique followed by ankle block (15) and axillary nerve block (10). Combined spinal epidural was given in three cases only. (chart-1)

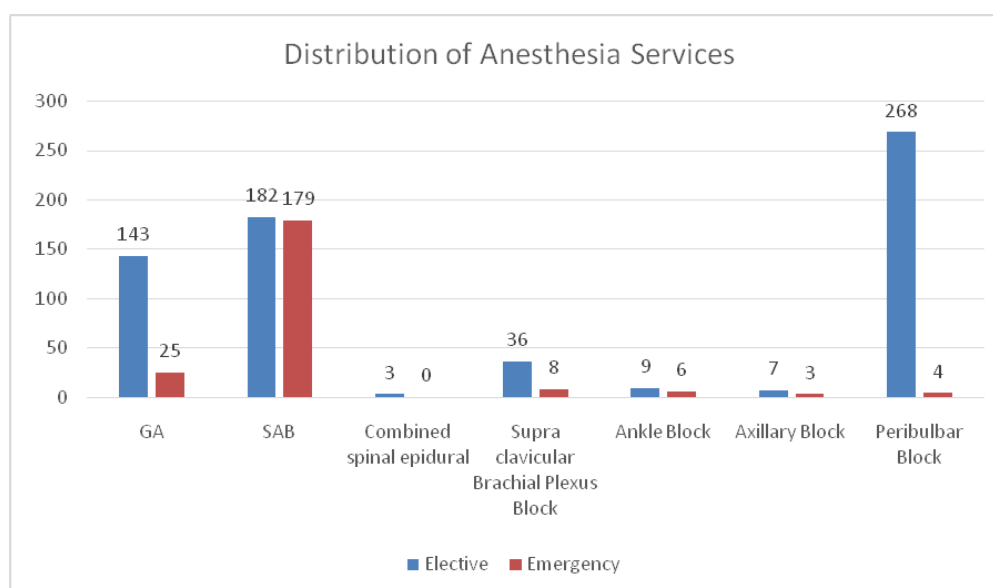


Chart 1: Distribution of Anesthesia services.



Image 1: Anesthesia workstation at our hospital

## DISCUSSION

Various surgical specialties with single operating table and single anesthesia workstation catering a population of approx. 3.82 lakh have provided anesthetic services to 873 patients in the time period of study. The infrastructural drawback is a major hurdle in delivering services. For a single workstation catering a population of 3.82 lakhs is huge task. Most of anesthetic services are delivered in the institution as per equipment and gadgets provided. Absence of POCUS and advanced hemodynamic monitoring limits the anesthetist in providing safe anesthesia services to critically ill patients. In the above-mentioned facilities only ASA-1 or ASA-2 patients can be managed safely. For providing services to critically ill patients requiring emergency surgery provision of safe anesthetic services will be compromised hence referral of such cases has to be done in timely manner.

## CONCLUSION

From the study it can be concluded that variety of safe anesthetic services

provided is remarkable as per availability of gadgets. There is large scope of improvement in term of delivery of volume and safe practices. Provision of advanced monitoring with adequate ICU back up and increasing the operating table number is need of the hours to bring more improvement in services delivered.

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**Ethical Approval:** The study was approved by the Institutional Ethics Committee

## Abbreviations:

GA- general anesthesia, SAB- sub arachnoid block, PBB- Peribulbar block, CSE- combined spinal epidural.

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