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Short Communication

Current Indications of Spinal Anaesthesia: A Short Communication

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ABSTRACT

Spinal anaesthesia is a widely used regional anaesthesia technique that has been practiced for over a century. It has evolved and developed over time. This technique is learned early during training and is relatively easy to master. This article aims to highlight the current indications for spinal anaesthesia and discuss its various benefits and applications. The article begins by providing an overview of the history of spinal anaesthesia, mentioning its introduction by August Bier. It emphasizes that spinal anaesthesia is commonly performed for surgeries below the umbilicus and is the technique of choice in resource-poor developing countries.

Keywords: Spinal anaesthesia; Paediatric surgery; General anaesthesia; Perioperative analgesia

DESCRIPTION

This article proceeds to discuss the advantages of spinal anaesthesia over general anaesthesia. It avoids airway manipulation, reduced intraoperative blood loss, decreased opioid consumption, reduced incidence of Deep Venous Thrombosis (DVT), better postoperative pain control, reduced Postoperative Nausea and Vomiting (PONV), early ambulation, shorter stay in the Post Anaesthesia Care Unit (PACU), and early discharge from the hospital. These advantages make spinal anaesthesia an attractive option for a variety of surgical procedures.

The article presents a narrative study of the literature obtained from various sources such as PubMed, Google Scholar, and the Cochrane Library. It includes review articles, randomized trials, systematic reviews, meta-analyses, and clinical trials as sources of evidence.

For supra-umbilical surgeries like open ventral hernia repair and open cholecystectomy, spinal anaesthesia has been found to provide adequate anaesthesia and better postoperative pain control compared to general anaesthesia [1,2]. It also reduces the incidence of postoperative nausea and vomiting.

In inguinal hernia repair, spinal anaesthesia has shown better postoperative pain relief and patient satisfaction compared to general anaesthesia [3]. It is also associated with a lower incidence of postoperative nausea and vomiting, particularly in open hernia repair.

Spinal anaesthesia has demonstrated benefits in orthopedic surgeries such as total hip or knee replacement [4]. It has been associated with fewer complications, decreased intraoperative blood loss, reduced transfusion requirements, decreased incidence of DVT, reduced opioid consumption, and improved pain control compared to general anaesthesia. Patients who receive spinal anaesthesia have shown better outcomes, including shorter operative and postoperative recovery times and lower rates of adverse events [5].

In obstetrics and gynecology, single-shot spinal anaesthesia is the preferred technique of choice for both elective and emergency caesarean sections [6]. It discusses the benefits of spinal anaesthesia such as avoiding airway complications, allowing the parturient to be awake during delivery, and reducing polypharmacy and complications associated with Gynecologic Age (GA) [7]. Rapid sequence spinal anaesthesia is especially useful in emergency cases where the delivery of the foetus must be expedited due to a compromised foetal state [8]. Spinal anaesthesia has become a reliable alternative to GA in gynecological open and laparoscopic surgeries [9].

In paediatric surgery, spinal anaesthesia is considered safe, cost-effective, and technically feasible [10]. It has a high success rate and is particularly suitable for lower abdomen and lower limb surgeries in premature neonates and infants, who are high risk for GA [11].

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Furthermore, this article discusses the potential benefits of spinal anaesthesia in reducing cancer recurrence in oncology surgery. It also acknowledges that more large-scale randomized controlled trials are needed to fully understand the impact of regional anaesthesia on cancer outcomes [12].

In vascular surgeries, spinal anaesthesia or combined spinal anaesthesia is an alternative to GA for high-risk elderly patients undergoing infrainguinal vascular surgeries and lower limb amputation [13]. Spinal anaesthesia results in fewer cardiopulmonary and renal complications, lower opioid requirements, fewer surgical complications, and revision surgeries [14].

In laparoscopic surgeries, spinal anaesthesia can be safely and effectively used in laparoscopic cholecystectomy, sleeve gastrectomy, appendicectomy, abdominal hysterectomy, and laparoscopic-assisted vaginal hysterectomy. Spinal anaesthesia offers various benefits in keeping the patient awake, it doesn't involve airway manipulation, effective perioperative analgesia, better hemodynamic stability, lesser incidence of PONV, shorter PACU stay, and reduced length of stay in the hospital [15,16].

In spine surgeries, Enhanced Recovery After major Surgery (ERAS) protocol has favored spinal anaesthesia for lumbar spine surgery. Spinal anaesthesia is superior to GA in providing better perioperative analgesia, better hemodynamic stability, shorter PACU stay, and reduced cost [17].

In ambulatory surgery, spinal anaesthesia with 2% Hyperbaric Prilocaine or 1% 2-Chloroprocaine results in faster onset and offset of motor blockade, early return of bladder function, early ambulation, and less time taken to discharge [18,19].

The perspective of spinal anaesthesia in lower and middle-income countries highlights the challenges and opportunities in providing safe and affordable anaesthesia care in these regions. The data presented suggests that perioperative anaesthesia-related mortality rates are higher in lower and middle-income countries compared to high-income countries. This disparity is mainly due to the lack of proper anaesthesia care, especially in rural areas where a significant portion of the population resides [20,21].

The ease of learning, teaching, and performing spinal anaesthesia, as well as the simplicity and affordability of the required equipment, further contribute to its suitability in low and middle-income countries. The decreased need for extensive staffing and monitoring after spinal anaesthesia also helps alleviate the strain on limited healthcare resources. In some regions of India and Sri Lanka, the percentage of surgeries performed under spinal anaesthesia reportedly exceeds that of certain high-income countries, highlighting its growing popularity.

CONCLUSION

In summary, the perspective on spinal anaesthesia in lower and middle-income countries highlights the benefits of this technique in overcoming challenges associated with limited resources and infrastructure. By promoting the use of spinal anaesthesia, enhancing anaesthesia education and training, and leveraging innovative technologies, it is possible to improve anaesthesia care and patient outcomes in these underserved regions.

Future research in spinal anaesthesia should include segmental spinal anaesthesia with a continuous catheter, newer adjuvants that can prolong the duration of action, the role of spinal anaesthesia as a blood conservation strategy in thoracic and abdominal surgery and to formulate the volume of local anaesthetic according to the height, weight and volume of Cerebrospinal Fluid (CSF) calculated by MRI of the patient.

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