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CASE REPORT ANESTHESIA FOR SPECIAL PERSONS

Spinal anesthesia for thigh sebaceous cyst removal in a deaf-mute female patient

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ABSTRACT

Introduction: Anesthesia for the congenitally deaf/mute patients are complicated in the perioperative phase because deaf/mute patients have difficulties communicating regarding obtaining consent, understanding their level of anxiety and recognizing their discomfort/pain. Using techniques of regional anesthesia (for example, spinal), allows for continued communication with the patient, eliminates the need for manipulating the airways of the patient and provides for an improved quality of care to this population.

Case presentation: A 32-year-old female patient, who is deaf/mute, received excellent anesthesia care for an elective removal of a sebaceous cyst on her thigh. Communication between the patient and the staff was achieved using simple hand motions/gestures and the assistance of a family member acting as a translator before the surgery. The patient received spinal anesthesia with 2.5cc of 0.5% hyperbaric bupivacaine at the L3-4 interspace, resulting in a sensory blockade to T10 allowing the surgeon to complete the operation without needing to administer sedation to the patient. During the time the patient underwent surgery, monitoring of the patient's non-verbal symptoms of pain/anxiety were assessed by the anesthesiologist. Post-operative recovery from the surgical procedure was uneventful with the sensory block resolving completely at 2.5 hours after the injection of the local anesthetic. There were no complications identified post-operatively or during the perioperative period.

Conclusion: The case study illustrates that spinal anesthesia can be safely administered and provide effective patient centered care for deaf/mute patients undergoing lower extremity surgeries. In order to provide an appropriate perioperative experience for deaf/mute patients, the anesthesiologist must develop communication skills that accommodate the individualized needs of the deaf/mute patient. Providing thorough education/communication to the patient and their families prior to the surgery and maintaining close attention to detail during the intraoperative period will result in a positive perioperative experience for these patients.

Keywords: Deaf-Mute Patient; Lower Extremity Surgery; Perioperative Management; Regional Anesthesia; Sebaceous Cyst; Spinal Anesthesia.

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1. INTRODUCTION

Deaf-mute patients are an extremely at-risk population when it comes to perioperative medicine because of the communication barriers that exist between the health-care provider and the patient; these barriers create significant challenges to accurately assess preoperative evaluations, to clearly convey and explain the anesthetic plan, and to effectively recognize or assess the presence of pain or discomfort to the patient during the perioperative time frame. There is extensive research indicating that deaf-mute patients often experience challenges in obtaining a complete history and

identifying potential comorbid conditions and reporting symptoms as a result of communication issues, thus a customized plan of anesthetics is required.[1-5]

Bhalotra and Gupta state that due to poor communication, there are many challenges faced by the physician such as, obtaining a complete history, obtaining informed consent, explaining the anesthetic plan, and assessing postoperative analgesia, and that poor communication creates the potential for increased anxiety, physical stress, and delays in recovery.[1] Additionally, Singh and Nasser emphasize the difficulty in establishing communication with a deaf-mute patient as it relates to providing adequate anesthesia care, they emphasize that developing a customized strategy to establish communication and to identify potential distress, to ensure safety, and to develop informed consent is crucial.[2] Furthermore, Chowdhry et al. (2016), indicate that communication limitations can impact the assessment of postoperative pain and that specialists support, and the coordination of specialized preparations, and modifications to the standard perioperative work flow, are necessary to ensure the patient's comfort and safety.[3] Moreover, broader literature reviews of Deaf healthcare emphasize that using standardized communication tools, such as professional sign language support, is necessary to prevent misunderstandings, to reduce anxiety, and to promote ethical decision-making during medical interactions.[4] In addition, reports focused specifically on deaf-mute patients undergoing surgery emphasize the risk of limiting the amount of information provided to deaf-mute surgical patients, particularly as it relates to options for anesthesia and peri-procedural risks.[5]

Therefore, in consideration of the communication barriers associated with deaf-mute patients, regional anesthesia (including spinal anesthesia) presents numerous benefits for lower limb surgical procedures. These benefits include: a reliable sensory block, avoiding airway instrumentation, reduced perioperative stress, and allowing continuous patient observation without the masking effects of general anesthesia.[6] Additional evidence from resource-limited settings demonstrate that regional techniques reduce airway related complications, increase patient comfort, and preserve communication channels throughout the surgery, which are particularly beneficial for patients with sensory or speech impairments.[7] Although rare, the auditory side effects of spinal anesthesia have also been documented, emphasizing the need for counseling and postoperative monitoring in patients who already have hearing loss.[8]

Collectively, the literature demonstrates that deaf-mute patients require personalized, communication sensitive anesthesia care, and that spinal anesthesia has particular benefits for minor lower limb surgery by enhancing safety, reducing airway manipulation, and providing for non-verbal interaction throughout the procedure.

This is a report of a 32-year-old deaf-mute woman who underwent a surgical excision of a sebaceous cyst on the anterior aspect of her right thigh, with the use of spinal anesthesia. This report will discuss: our plan for the anesthesia, and how we communicated intra- and post-operatively with the patient, and some of the intraoperative concerns we experienced.

2. CASE REPORT

The patient underwent an initial screening assessment to identify any potential risks associated with undergoing anesthesia. She had 58 kg weight and 160 cm height. Except being deaf-mute since birth, she had no other known medical condition

Communication with the patient was performed using hand gestures and/or sign language, although the patient's family member acted as translator.

A thorough general physical examination was conducted to assess the patient's overall health status. The patient's respiratory system was examined and it was determined that she had a Mallampati Classification II airway. She had a normal range of motion of her neck and a normal range of mouth opening. The patient's baseline vital signs prior to administering the spinal anesthesia were as follows: Blood Pressure: 118/74 mmHg; Heart Rate: 82 beats/min; and SpO_2: 99% on room air. Her renal function tests, liver function tests and full blood count were all within normal limits.

The patient was verbally described the spinal anesthesia procedure using visual aids, hand gestures and/or the assistance of her family member. The patient was informed of what sensations they would likely experience once the spinal block was established, to help alleviate any concerns or anxieties the patient may have had about undergoing the spinal block. Written informed consent was obtained from the patient.

Once the patient had been informed of the spinal anesthesia procedure, she was transported to the operating room, where she was attached with standard monitors including electrocardiogram, blood pressure monitor and pulse oximeter.

An intravenous catheter was inserted and 250 ml of Ringer's lactate solution infused to ensure hydration prior to administering the spinal anesthesia. The patient was then positioned in a sitting position.

The patient underwent the placement of a spinal block at the L3-L4 interspace using a 25 gauge Quincke spinal needle. Following identification of free flow of

cerebrospinal fluid, 2.5 ml of 0.5% hyperbaric bupivacaine was slowly administered into the spinal space.

Within five minutes of administering the spinal block, a sensory block to the level of T10 was established and sufficient for the surgical site. The patient had a complete motor block (Bromage Score 3) and indicated her comfort and reassurance through hand gestures for the duration of the procedure.

The surgical procedure was completed in thirty minutes. During this time, the patient experienced no episodes of hypotension or bradycardia and the patient's hemodynamic status remained stable. Oxygen was administered to the patient at 2 litres per minute via nasal prongs for comfort purposes only. Due to the patient's communication barriers, continuous visual contact was maintained with the patient throughout the procedure. The patient was permitted to communicate any discomfort or anxiety that she may be experiencing by utilizing pre-established hand gestures.

During the surgical procedure, the patient reported no pain or distress. The surgical procedure proceeded without incident, with minimal blood loss (<20 ml).

After completing the surgical procedure, the patient was transferred to the recovery room where the patient was continuously monitored. Within two and a half hours, the patient's sensory and motor block had completely resolved. Postoperatively, the patient's pain was managed effectively with paracetamol 1 g IV. Approximately four hours after the surgical procedure, the patient was able to ambulate and was subsequently discharged home that same day with verbal and written instructions regarding postoperative care, which was provided to the patient's family through both verbal and written translations.

3. DISCUSSION

Perioperative care for deaf-mute and hearing-impaired patients poses specific challenges that will necessitate an individualized plan for communication and anesthetic strategy. The communication barriers that exist between the physician and the patient, create barriers for both the history taking process, obtaining of informed consent, and the assessment of perioperative pain.[1,2,4,6]

There have been several reports indicating that deaf-mute patients present a specific set of challenges related to perioperative care, including difficulty expressing their discomfort, difficulty understanding and interpreting instructions, and difficulty participating in decision-making regarding their care due to limitations in their ability to communicate effectively.[1,2,4,6] There is a well-documented recognition that deaf-mute patients cannot articulate their levels of pain and anxiety and that a thorough preoperative assessment, supported by visual aids, sign language, or gestural communication methods, is necessary for establishing effective cooperation and maximizing patient safety.[4,6] A large body of qualitative research has indicated that deaf patients most frequently prefer on-site professional interpreters over written communication.[4]

Successful perioperative communication strategies have included preoperative education, the utilization of gestural based instruction, development of customized cueing systems, and involvement of either family members or professionally trained interpreters to enhance perioperative safety and establish and maintain patient trust. Reports of case studies provide documentation that structured communication plans, minimal sedation, and maintaining the patient awake enough to provide meaningful responses are important elements for providing safe perioperative care to deaf-mute patients.[2, 6] Structured communication training of patients, utilizing direct cues, prior to even specialized intraoperative wake-up testing has demonstrated its importance in achieving success.[9] Utilization of novel approaches (e.g., face-tapping, hand-pressing) to develop personalized communication systems during topical cataract anesthesia have provided examples that tailored methods can be utilized to support the facilitation of intraoperative interaction between hearing-impaired patients and their surgeons.[14]

Regional anesthesia techniques (e.g., spinal anesthesia, peripheral nerve blocks) offer unique benefits to the population of hearing-impaired patients. Regional anesthesia avoids the necessity of airway manipulation, decreases the requirement for sedatives, reduces physiologic stress, and offers the opportunity for continuous intraoperative communication among patients who are unable to verbally communicate.[4,5,10,11,13,15] In addition, spinal anesthesia provides a rapid onset of action, a dense sensory block, and a high success rate for lower extremity surgeries that allows patients to remain awake and able to interact with their healthcare providers during the procedure.[4,5,11]

The primary benefit of these techniques is that they enable healthcare providers to continue to assess the level of the block using visual or tactile cues and to maximize patient autonomy. Additionally, regional anesthesia techniques have allowed for safe outcomes in high-risk or emergency settings, including COVID-19 exposure cases, while at the same time overcoming the communication barriers that exist in the perioperative setting and minimizing the risks of general anesthesia.[15]

A common thread that runs through each of the studies reviewed was that structured communication techniques, patient-specific reassurance strategies, continued

monitoring, and the thoughtful selection of regional anesthesia were all important elements in reducing psychological stress and ensuring safe perioperative care for hearing-impaired patients. Therefore, when carefully planned these factors consistently contribute to optimal patient outcomes despite the existence of significant communication barriers.

4. CONCLUSION

The use of spinal anesthesia (or epidural) for lower extremity surgery in a deaf-mute patient is a safe and appropriate technique for providing anesthesia for such surgery; this procedure may be safely administered by tailoring the technique and counseling the patient's unique needs as well as monitoring the patient closely.

5. Conflict of interest

All authors declare that there was no conflict of interest.

6. Ethical considerations

The study conformed to the guidelines as laid down in the Declaration of Helsinki.. Written informed consent was obtained from the next of kin of the patient to use the report for educational purposes.

7. Funding

This study utilized institutional resources only.

8. Authors' contribution

Both authors took equal part in the management of the case and literature search and drafting this manuscript.

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