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BROKEN SPINAL NEEDLE - A CASE REPORT

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Abstract

Broken spinal needle is a rare complication of spinal anesthesia which has the potential of causing serious neurological morbidity. We are reporting a case of a broken spinal needle in a 17-year-old male who was scheduled for drainage of pilonidal abscess. We highlight the factors predisposing to this complication and the multidisciplinary management. In our patient, a very small spinal needle (27G) and the patient's morbid obesity contributed to needle breakage. The successful management of this complication requires early identification and intervention by a multi-disciplinary management team to prevent neurological complications.

Key words *- Broken spinal needle, Spinal anesthesia, Obesity*

List of abbreviations -

BMI-body mass index

ASA grade 1 -American society of Anesthesia grade 1

Kg- kilograms

G- Gauge

Neuro - Neurosurgeon

CSF-cerebrospinal fluid

MRI-Magnetic resonance imaging

PACU-post anesthesia care unit

I & D- incision and drainage

L3- third lumbar vertebra

Introduction:

Spinal Anaesthesia has gained popularity due to its varied indications making it the preferred technique despite the certain degree of contraindications associated with it. This led to a wide-spread debate regarding its use and the fundamental effects that spinal Anaesthesia may have upon the patient. However, the complications occurring during a subarachnoid block is scarcely discussed. There are number of risks associated with the deformation of spinal needle such as CSF leak, nerve damage, spinal cord injury. In this article we report a case of broken spinal needle and its management at our setup. This case report was reviewed by Armed Forces Medical services Research Ethics Committee (AFMS-MREC). The case report is completely anonymized with no identifying features and a waiver of consent was obtained from the IRB. This case report adheres to the appropriate equator guidelines.

Case Description

A 17-year-old male was scheduled for Incision and Drainage of Pilonidal abscess under spinal anesthesia. He was morbidly obese, weighting 104.5kg (BMI-43), without any co-morbidities. He was accepted for surgery under ASA 1 grade.

Expecting some airway difficulty due to his obesity, the on-call anesthetist decided to do the case under spinal anesthesia. Patient was connected to the standard monitors and the spinal injection took place with the patient in a sitting position, using a 27G pencil point spinal needle through a 20G introducer.

The spinal injection was technically difficult due to his obesity, requiring multiple attempts. Upon the 5th unsuccessful attempt, as the needle was withdrawn from within the introducer, it was noticed that the spinal needle was broken and remained in situ.

Figure1. Fluoroscopic View of the broken needle in situ

The procedure was immediately abandoned and a portable X-ray was taken, which showed a fractured spinal needle fragment at the L3 spinous process level. (Figure2).

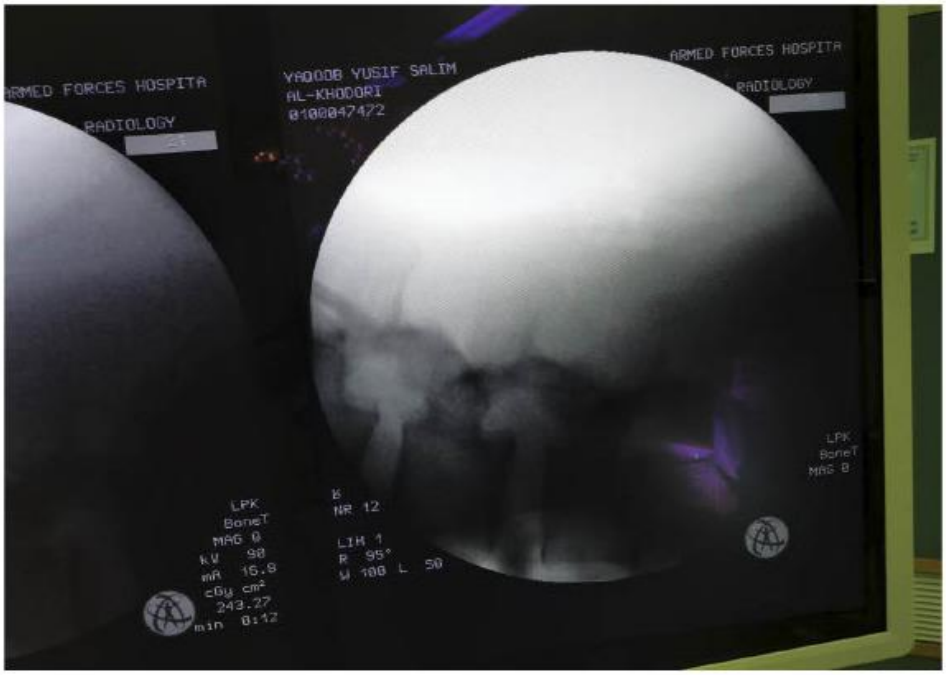

Figure2. Post operative fluoroscopy after removal of the foreign body and the broken needle fragment.

Consultant Anaesthetist, General surgeon and spine surgeon, collectively decided to remove the retained fragment, followed by the scheduled surgery I&D (incision and drainage) of pilonidal abscess in the same settings under general anesthesia.

The management plan and the complications were briefed to the patient and his father, an in-formed consent obtained and surgery was performed under general anesthesia in prone position.

The spinal needle fragment was removed and the total fragment removal confirmation was done by using fluoroscopic control and measuring the length of the broken needle, followed by scheduled surgery.

Patient was successfully extubated and discharged from PACU without any residual weakness. The Next day, he was reviewed by the spine team and the following clinical assessment was made - the power in both legs are optimal (5/5); all the dermatome sensations were intact, with good bowel and bladder control. On the Second day, an MRI spine was performed which was reported normal by the consultant Radiologist. Patient showed very good recovery; hence on the 3rd day he was discharged home successfully.

He had an uneventful postoperative course without any neurological symptoms, and was re-viewed in spine clinic after two weeks with no pain or neurological sequels.

Figure 3. Broken fragment of the needle

Discussion:

In 1989, Quicke performed the first Lumbar puncture, however, the first case of the rarest com-plication of a broken spinal needle was reported by Naumann, 9 years after the introduction of lumbar puncture. Ever since it was first introduced, J.N.Cave, published an article in July 1938, in the British Journal of Anaesthesia, reporting all the cases of broken spinal needle (1) Of which, he identified two main reasons of accidents, one that is associated during the insertion of the needle which is a mechanical factor, whereas second reason is associated with the movement of the patient during the procedure, which is easy to control by proper patient counselling. The techniques and quality of spinal needle has improved over the period of time but still there are cases been reported even today. Some studies show that, breakage of spinal needle is an avoidable complication, however, increased incidence was observed in obese parturient (2,3,4). Kabore RAF and team reported the main cause as the inadequate mobilization of the introducer and they recommend use of ultrasound for failed or difficult lumbar punctures. (4)

Anne Moll mentioned three important factors responsible for needle fracture. (5) Firstly, minimizing the size of the needle to reduce the incidence of post Dural puncture headache increases the likelihood of damaging the needles (3,6). However, this has been taken care of by increasing the tensile strength of the needles. The Second important reason is the technique, which leads to breakage of needle due to impact on bone or resistance by rigid spinal ligaments. To avoid this, repositioning of the spinal needle with the stylet and the introducer is decisive. Narrow-gauge spinal needles are more vulnerable to breakage. Last but not the lease factor is patient positioning, although there are no reports that describe the influence of specific position which can contribute to breaking off spinal needle. In case of difficult needle insertion, ultrasound guidance is highly recommended to identify the anatomical landmarks. (2,3)

Despite taking all the precautions, even if the needle breaks, it is more important to know the complications and consequences of a broken spinal needle. Once broken, the needle will act like a foreign body, which can either migrate or cause fibrosis or infection of the surrounding tissues. It can also lead to neurological complications such as nerve damage, pain, infection and CSF leak-age, leading to numbness, paresthesia or weakness. (5)

Hence, broken needle ideally should be removed as soon as possible, preferably in the same surgical session by a spine or neuro surgeon.

As per the recommendations in previous literatures for the removal of the needle fragment (5) as soon as possible, our case was also managed appropriately by removing the needle in the same setting, and patient was discharged home without any neurological complications.

Conclusion:

The breaking of spinal needle is a rare complication of neuraxial Anaesthesia due to multitude of causes. However most important is to manage the potential consequences of a foreign body in the spine. Successful management of this complication requires early identification and intervention of a multi-disciplinary management team, consisting of the primary operating surgeon, anesthetist and neurosurgeon/spine surgeon.

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