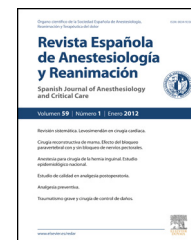




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## CASE REPORT

# Spinal anaesthesia in a patient with post-spine surgery dural ectasia

C.L. Errando, A. Del Moral, I. Cobo, N. García-Gregorio, M.A. Pallardó-López\*

Servicio de Anestesiología, Reanimación y Tratamiento del Dolor, Consorcio Hospital General Universitario de Valencia, Valencia, Spain

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### KEYWORDS

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### PALABRAS CLAVE

Anestesia subaracnoidea;  
cirugía general;  
anciano, anciano de 80 o más años;  
anciano frágil;  
variaciones anatómicas

**Abstract** Dural sac ectasia is a very infrequent anatomical abnormality, usually caused by connective tissue diseases, as Marfan syndrome. Very few cases have been described being a consequence of a previous spine surgical procedure.

We describe the case of an elderly patient who should be operated on twice due to subocclusive colon disease. Surgery was performed under spinal anaesthesia. A dural sac ectasia was suspected after the first procedure and the abdominal X-ray was reviewed. The characteristics of the anatomical alteration and the course of both anaesthetic procedures were described. X-ray and CT images were provided.

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### Anestesia subaracnoidea en un paciente con ectasia dural postcirugía raquídea

**Resumen** La ectasia del saco dural es una alteración anatómica infrecuente causada habitualmente por enfermedades del tejido conjuntivo como el síndrome de Marfan. Se han descrito pocos casos que sean consecuencia de un procedimiento quirúrgico previo en el raquis.

Describimos el caso de un paciente anciano que fue operado dos veces por suboclusión del colon. La operación fue llevada a cabo con anestesia subaracnoidea. Se sospechó una ectasia del saco dural tras la primera cirugía y por la revisión de la radiografía abdominal.

Se describen las características de la alteración anatómica y el curso de ambos procedimientos anestésicos. Se aportan la radiografía simple y las imágenes de TC.

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## Introduction

It has been estimated that more than 325,000 spinal anaesthesia procedures are performed in the UK per annum.<sup>1</sup> Despite that spinal anaesthesia was introduced more than

\* Corresponding author.  
E-mail address: [mpallardolopez@yahoo.es](mailto:mpallardolopez@yahoo.es)  
(M.A. Pallardó-López).

100 years ago, and experience spreads all around the world, several types of failures appear in daily practice.<sup>2</sup> Among the general causes of failures reported (failed lumbar puncture, solution injection errors, inadequate intrathecal spread, ineffective drug action, and failure of adequate management after the puncture) inadequate spread has been attributed to anatomical abnormalities, and this possibility includes a larger than usual cerebrospinal fluid (CSF) volume. It is known that the primary determinant of block extent of a spinal anaesthetic is CSF volume in normal patients.<sup>3</sup>

Related with this can be dural ectasia, a rare malformation consisting in a dilatation of the dural sac, most of times localized in the lumbar or low thoracic-lumbar spine, and associated with several diseases. However this is usually occult and, during a spinal anaesthetic, a sensory block level lower than required for surgery could be obtained, needing additional interventions.

We present the case of a patient sustaining an undiagnosed dural ectasia who presented for emergent abdominal surgery that was operated on under spinal anaesthesia.

## Case report

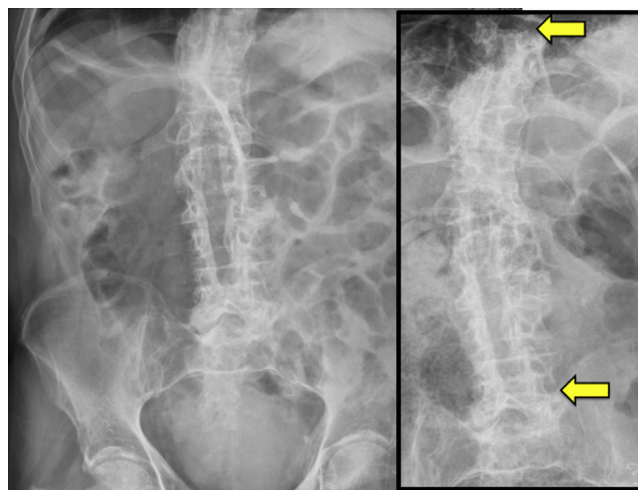
A male patient, 88 years old, 60 kg, 155 cm, ASA physical status III E, presented in the emergency department with acute abdominal pain and subocclusive colon disease. The patient had had several previous admissions, and in this occasion surgery was indicated.

Associated diseases were global respiratory insufficiency due to chronic obstructive airway disease (treated with inhaled steroids, ipratropium bromide, and salbutamol), atrial fibrillation (treated with warfarin, which was withdrawn 72 h before in a previous emergency department admission), thoracoabdominal spine surgery due to a severe trauma several years ago (no more data were available of this procedure), left lower limb thrombophlebitis, and age-related general deterioration. The patient sustained a megacolon with colonic volvulus having previously deemed to need no scheduled surgery due in part to the health status of the patient.

Apart from the clinical aspect of frailty, exploration showed moderate abdominal distension, and diminished respiratory sounds on auscultation. Blood analysis showed anaemia (haemoglobin 8 g/dL), and no other alterations (including coagulation profile). The ECG showed sinus tachycardia at 110 bpm; a chest X-ray showed basal left atelectasis, and an abdominal X-ray showed the volvulus and the colon with extensive aeration.

The surgical procedure consisted of an open left haemicolectomy with colostomy (Hartmann procedure) via midline infraumbilical incision. Antibiotic prophylaxis was administered.

Spinal anaesthesia with sedation was chosen. We use 4 mg of hyperbaric bupivacaine (0.8 ml of 0.5% hyperbaric bupivacaine diluted with saline to 1.5 ml). The lumbar puncture was performed in the lateral decubitus position. On back palpation no spinous process references were noted except at a very low lumbar level. A long longitudinal midline scar was observed in the patient's back. The puncture was made by paramedian approach at the presumed L2–L3 interspace,



**Figure 1** Posteroanterior abdominal X-ray. The image of the bowel volvulus can be seen. A radiolucent midline area is observed that corresponds with the extensive laminectomy (and probably with the dural sac ectasia). Detail is showed in the right part of the image. Arrows mark the upper and lower limits.

with a 25G pencil point spinal needle. Free flow of CSF was obtained at the second attempt, and the spinal drug injected. Cutaneous sensory level checked by pinprick was T5–T6.

Oxygen with nasal prongs was delivered. Sedation consisted of midazolam 3 mg in separate boluses, and two boluses of 20 mg of ketamine. An infusion of midazolam plus ketamine ( $1\text{--}2\text{ mg h}^{-1}$  and  $20\text{--}40\text{ mg h}^{-1}$ , respectively) was started and maintained throughout the procedure.

Surgery proceeded uneventfully until min 60 when the patient complained from pain on small bowel traction, additional midazolam 1 mg, ketamine 10 mg and fentanyl 0.1 mg were injected. Surgery lasted 90 min. No haemodynamic alterations were observed. The patient was discharged to the ward.

Consent of the relatives was requested for the case report and images publication.

After reviewing the abdominal X-ray a radiolucent image was observed in the midline (Fig. 1), and together with the antecedent of spine surgery, dural ectasia was suspected. Review of an abdominal X-ray from three years ago showed the same image.

Four days afterwards, acute abdominal pain developed again with fever and general status deterioration. Blood analysis showed anaemia, leucocytosis, and increased lactate and reactive C protein. A suture dehiscence with peritonitic reaction was suspected.

For confirmation surgeons requested a pelvic CT scan with contrast (Fig. 2). This showed a small dehiscence in the sigmoid bowel suture. In addition the dural ectasia was observed with accumulation of contrast and absence of the posterior structures of the spine (part of the spinous process, laminae and part of the pedicles) from T12 to L4, without rod instrumentation. On careful inspection of the X-ray film, the dural ectasia could be seen from almost T8 to L4.

Antibiotic treatment was started as well. Surgical repair was indicated. Haemodynamic status showed moderate arterial hypotension. The same anaesthesia team performed

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