



# Radiologically occult cervical intradural dermal sinus tract: a case report and review of literature

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## Abstract

We report the unusual case of a 7-month-old girl presenting with congenital cervical dermal sinus tract in which the intradural tract was not detected on preoperative imaging and was identified intraoperatively. Considering possible devastating sequelae of infection, excision of dermal sinus tract might be justified even in the case with radiologically undetected intradural tract.

**Keywords** Dermal sinus tract · Intradural tract · Cervical

## Introduction

Congenital spinal dermal sinus tract occurs with an incidence of 1 in 2500 live birth. Of those, cervical dermal sinus tract is rare and accounts for only 1% of all dermal sinus tracts [1–3]. The depth of the tracts varies. When the tract extends into the dura, the risk of infection such as meningitis, subdural abscess, or intramedullary abscess increases [4]. In such cases, surgical excision of dermal sinus tract is recommended to prevent infection even in asymptomatic patients. In cases without an intradural tract, surgical excision may not be recommended due to reduced risk of infections. However, imaging studies may not be relied on detection of an intradural tract, and surgical indication still remains to be established.

Herein, we report the unusual case of a 7-month-old girl presenting with congenital cervical dermal sinus tract in which the intradural tract was not detected on preoperative imaging and was identified intraoperatively. Surgical exploration of the intradural tract may better be performed even in radiologically undetected cases.

## Case report

A 7-month-old girl presented with a cutaneous epithelial defect in the midline of her upper posterior neck. Discharge from the cutaneous defect had not been observed. She had no medical history including meningitis. Physical examination showed no other abnormalities nor neurologic deficit. Magnetic resonance imaging (MRI) demonstrated the subcutaneous tract originating from skin surface to the dura at the level of C1/2, but the intradural tract was unclear (Fig. 1).

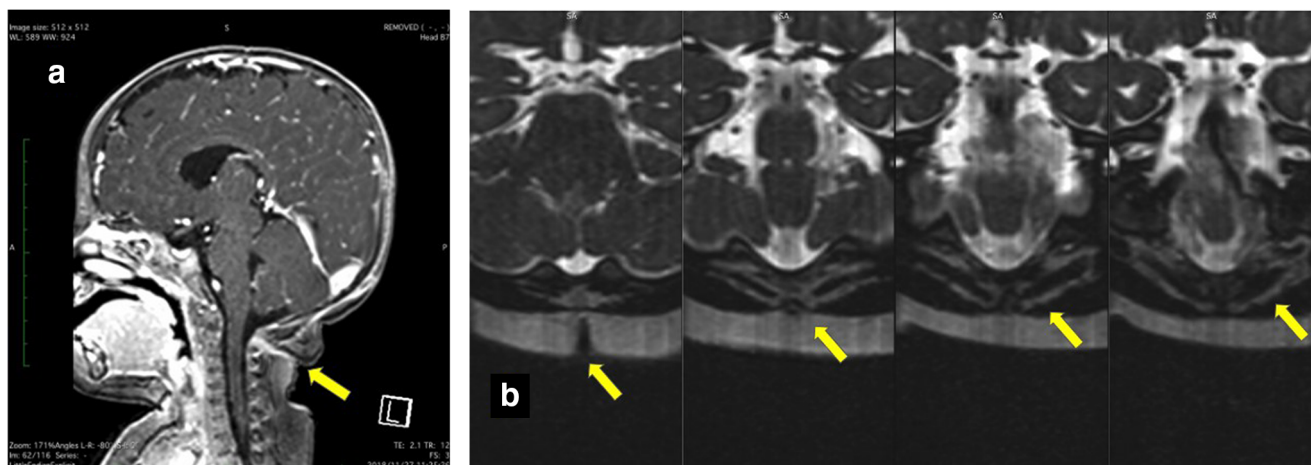
Since there was possibility that subcutaneous tract penetrated into the dura and would cause subdural infection in the future, we proceeded to the surgical excision of the tract.

Combined linear and elliptical skin incision around the cutaneous defect was made. The dermal sinus tract was followed to the level of the fascia. There was a fascial defect around the tract, and the tract entered into the fascia. The fascia was incised, and the tract was further traced deeply. The tract penetrated the dura between the lamina of C1 and C2. C1 laminectomy was performed and elliptical dural incision was made around the tract. Intradurally, the tract was found attached to the spinal cord (Fig. 2). The tract was transected slightly above the cord level.

The postoperative course was uneventful. Pathological examination demonstrated the tract comprising a lumen lined with stratified squamous epithelium. At the last follow-up, 1 year after surgery, the patient had been stable with normal development (Figure 3).

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**Fig. 1** Cervical magnetic resonance imaging (MRI) 1; Sagittal T1-weighted image with gadolinium [A] and T2-weighted image showed dermal sinus tract at the level of C1/2. The intradural tract was not detected

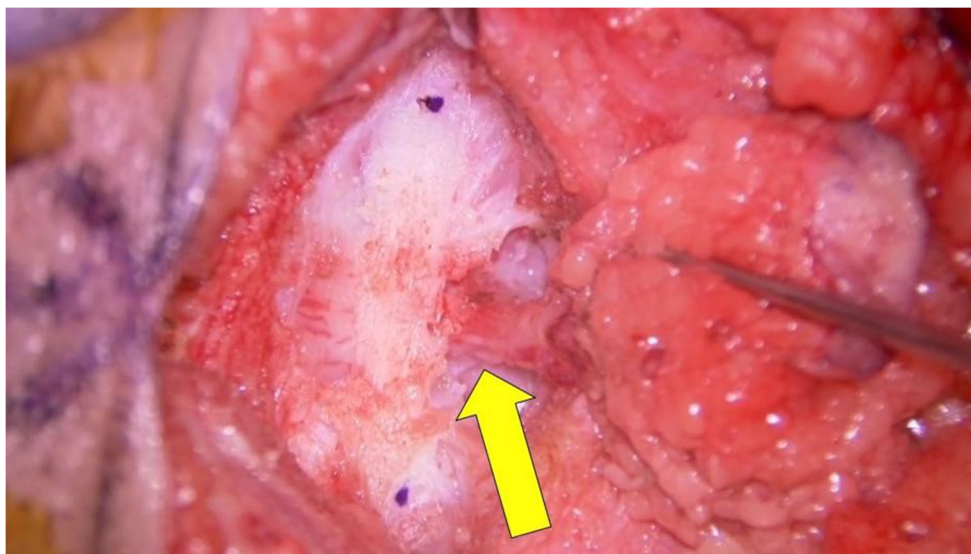
## Discussion

Congenital spinal dermal sinus tract occurs with an incidence of 1 in 2500 live birth. Of those, cervical dermal sinus tract is rare and accounts for only 1% of all dermal sinus tracts [1, 2]. The depth of the dermal sinus tracts can be various. When the tract extends into the dura, the risk of infection such as meningitis, subdural abscess, or intramedullary abscess increases, which also applies to the cervical dermal sinus tract [1, 4–8]. In such cases, surgical excision of dermal sinus tract is recommended to prevent infection even in asymptomatic patients. In cases without an intradural tract, surgical excision may not be recommended due to reduced risk of infections. However, imaging studies may not be reliable for detection of an intradural tract [9, 10]. Tisdall et al. reported that MRI underreported the presence of both an intradural tract (MRI

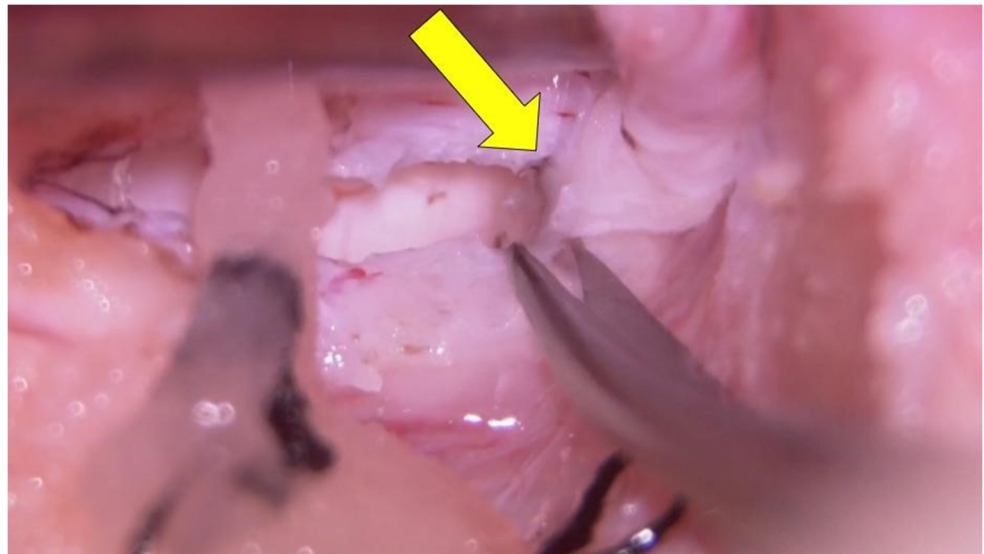
46%, operative finding 86%) and an intraspinal inclusion cyst (MRI 15%, operative finding 24%). In our present case, MRI could not detect the intradural tract which was identified intraoperatively, neither. Thus, surgical exploration of the intradural tract may better be performed even in radiologically undetected cases. The previous series comprised lumbar and lower thoracic dermal sinus tract [9, 10]. Our case is the first cervical dermal sinus tract in which the intradural tract was not detected by MRI and found intraoperatively.

Limited dorsal myeloschisis (LDM) has the resemblance with congenital dermal sinus tract, but there are different clinical importances between them [11, 12]. LDM is a closed skin defect and a solid tract without a lumen; thus, the possibility of infectious complications is considered low compared with congenital dermal sinus tract. Lee et al. reported several MRI features of LDM as higher visibility of the intrathecal

**Fig. 2** Intraoperative image showing a tract (arrow) penetrated the dura between the lamina of C1 and C2



**Fig. 3** Intraoperative image showing a thin tract (arrow) attached to the dorsal aspect of the spinal cord



tract, the tract attached to the cord, and dorsal tenting of the cord. In the present case, these features were not observed in MRI and congenital dermal sinus tract was more probable than LDM according to the findings of MRI, which also justified the surgical exploration.

## Conclusion

We report the first case of congenital cervical dermal sinus tract in which the intradural tract was not detected on preoperative imaging and was identified intraoperatively. Considering possible devastating sequelae of infection, excision of dermal sinus tract might be justified even in the case with radiologically undetected intradural tract.

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