

## Human Tail: A Case Report<sup>1</sup>

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Human tail is a rare congenital anomaly in which a lesion protrudes from the lumbosacroccygeal region. We encountered a case of human tail involving an intradural lipoma and tethered cord, occurring in a 1-day-old female who presented with an 8 cm-sized tail shown by MRI to arise from the S3-4 level. The cauda equina and film terminale were entrapped by the lipoma, but there were no bony abnormalities.

### Index words : Sacrum

Spinal cord, abnormalities

Magnetic resonance (MR), in infants and children

Human tail is a rare congenital anomaly in which a lesion protrudes from the lumbosacroccygeal region (1). Since 1884, about 70 cases have been reported, and the condition is frequently associated with other congenital anomalies. Human tails are generally classified as either 'true' or 'false', according to their histologic origin. We encountered a case involving a 1-day-old female patient with a true tail 8 cm length, which is probably one of the longest tails reported. We describe this case, together with the MR imaging findings.

### Case Report

A 1-day-old female infant was admitted to hospital for removal of the skin tag present in the sacroccygeal area. The tail was located in the middle of this area and measured 8 cm in length and 0.5 cm in diameter, and was covered with normal skin (Fig. 1A). It showed no movement.

The child was delivered as a full-term neonate, and otherwise appeared normal. Its birth weight was 3.08 kg

and there were no other abnormal clinical symptoms or signs. Magnetic resonance (MR) imaging revealed that the tail extended from the sacroccygeal area at the S3-4 level, was 8 cm in length, and that its signal intensity was mostly that of fat (Fig. 1B). Sagittal T2-weighted MR image (Fig. 1C), showed that a low signal intensity area of fat was extended longitudinally to the tip of the tail. The spinal cord extended to the upper margin of the third lumbar vertebra and focal fat signal intensity was noted at the conus. No associated anomaly of the vertebral column was detected.

The tail was successfully excised and the patient was discharged 15 days later. Macroscopic section showed that the tail was composed of fibroadipose tissue containing blood vessels and peripheral nerve, and was covered by normal skin (Fig. 1A).

### Discussion

As already noted, human tail is a rare congenital anomaly in which a lesion protrudes from the lumbosacroccygeal region. Its presence may lead to psychological problems among the patient's family, and so is usually excised just after diagnosis. Associated anomalies are frequently present (7).

A knowledge of the embryology of the nervous system is helpful in understanding this congenital anomaly.

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At the fourth week of gestation, somites are formed and the remaining primitive knot and streak, comprising a compact mass at the caudal end, is known as the 'tail bud' or 'end bud'. After continued uneven growth, this extends and curls beneath the hind gut. At the fifth and sixth weeks, the trunk ends in a tail containing 10 - 12 caudal vertebrae and with a distal portion which lacks bone and is composed of mesodermal elements. At the seventh and eighth weeks of gestation, the vertebrated portion retracts into the soft tissue and the nonvertebrated portion projects temporarily and then undergoes regression due to phagocytosis (1, 3). It is generally believed that a true human tail arises from the distal, unvertebrated portion of the embryonic tail found at this stage of gestation (7).

Dao and Netsky classified human tails as either 'true' tails or 'pseudotail'. The former contain a nonvertebrated portion of the embryonic tail, such as adipose and connective tissue, striated muscle, or blood vessels and nerve, and is covered by normal skin, a pseudotail, is a secondary protrusion caused by various anomalies or neoplasms such as an elongated coccyx, a teratoma or lipoma, a parasitic fetus, fibrolipoma, chondromegalic protrusion, or a prolonged sacrum (2, 4). The pseudotail

is a structure accidentally located in the lumbosacral area (5).

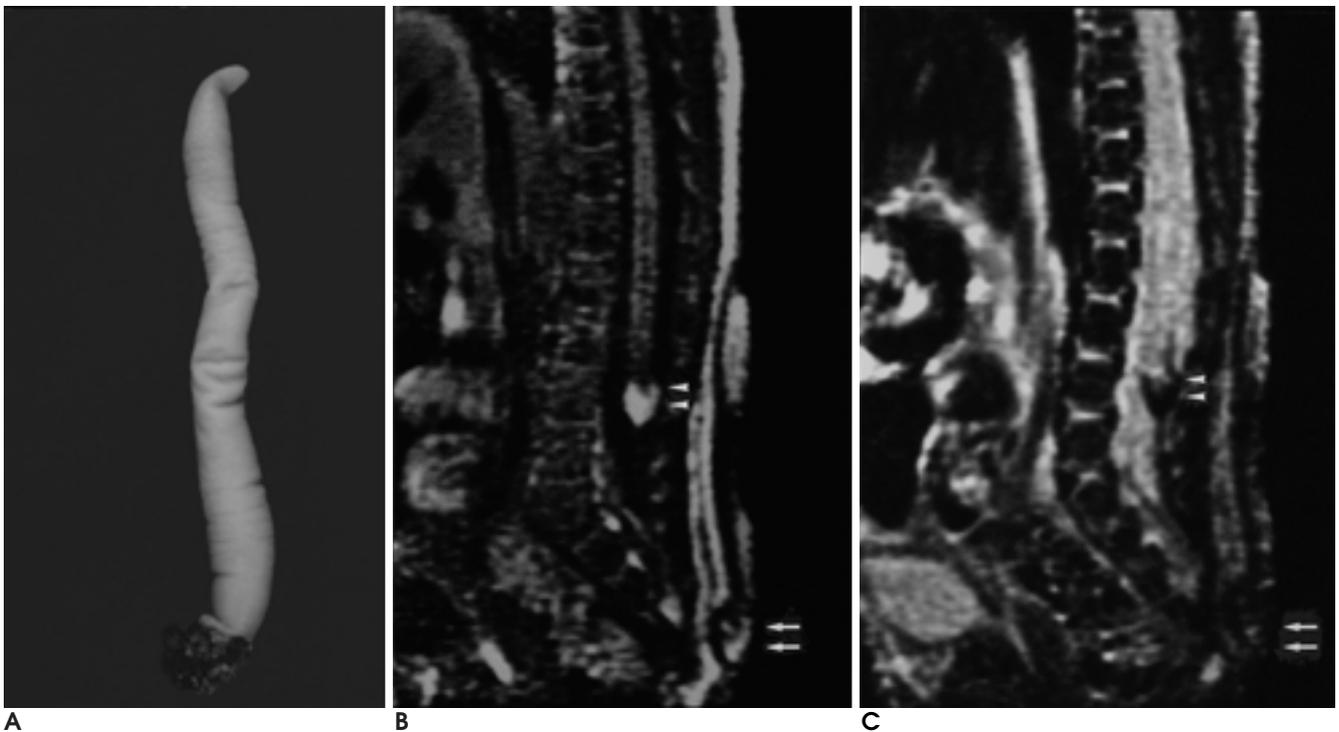
The gross appearance of a true tail has been described as resembling a penis, finger, or sausage. In one study (6), all 33 tails ranged in length from 3 to 13 cm, and measured from 0.7 to 3 cm in diameter.

Movement or contraction, occurring only in a true human tail, has been recorded in only six cases.

Pseudotails are usually located in the coccygeal area, but in a parasitic fetus are found in the lumbar region. They are short and stump-like (6).

The microscopic appearance of a true tail is as follows: mature fatty tissue is divided into small lobules by thin fibrous septa, and in the center of the tail, small scattered blood vessels and nerve fibers, and bundles of longitudinally arranged striated muscle fibers, are aggregated. The surface of a true tail is covered by skin, with normal hair follicles, and its dermis is usually thicker than normal (6).

The human tail is frequently associated with other anomalies such as spinal dysraphism, with or without meningocele, lipoma of the tail base, tethered spinal cord, and coccygeal vertebrae (1). The most common of these is spinal dysraphism. Because treatment plans dif-



**Fig. 1. A.** Grossly, the specimen is 8 cm in length and 0.8 cm to 1 cm in diameter. And, the surface of the tail is covered with skin. **B, C.** On sagittal T1 weighted MRI, the tail is elongated from the sacrococcygeal area at S3 - 4 level (arrows), and 8 cm in length. It is mostly composed of fat signal intensity in internal portion and extended longitudinally to its tip, which shows low signal intensity on T2 weighted image. And spinal cord extends to the upper margin of third lumbar vertebra and focal fat signal intensity (arrow heads) is noted at conus.

fer according to the nature of the associated anomaly, the evaluation of such features is very important (8).

In patients with tethered spinal cord syndrome, the clinical course of the condition usually worsens with age, especially after the second birthday, and early surgery is thus necessary.

Focal premature dysjunction of the neural tube exposes the ' para-axial ' mesoderm to the dorsal aspect of the neural ectoderm, and the subsequent formation of fatty elements and lipoma may prevent its fusion. The attachment of fatty elements to neural structures thus occurs at the tip of the spinal cord, leading to tethered spinal cord syndrome (1).

The imaging findings of human tail play an important role in its evaluation. In particular, because it has excellent resolution and is able to evaluate the underlying relation between the tail and the neuraxial structure, and the presence of associated anomalies such as lipoma, meningocele and bony anomaly, MRI should be the modality of choice.

In summary, we have described the radiographic and

histologic findings of true human tail with intradural lipoma and tethered spinal cord. In this case, the tail was successfully excised and the patient was discharged without any further complication.

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