

ACTA MEDICA IRANICA

Vol. XXI. 1978, P. 202-208

APPENDIX DUPLEX

A Case Report

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Introduction

Only a few cases of Appendix Duplex have been reported in the world literatures.

About 50 cadavers are dissected annually at the faculty of Basic Medical Sciences, Anatomy department, at the University of Tehran.

During the last 18 years, the authors who have worked there, have not encountered a single case of Appendix Duplex, and have not heard of any case being reported prior to their employment in the Department: On January 20th, 1978 during an investigation about Appendix length, we encountered this variation eventually in the cadaver.

Case report

The body was that of a thin man, aged approximately 45 years, who had died of unknown causes.

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University of Tehran.

No evidence as to his past medical or social history, or identity was available. The body was prepared in the usual manner, and the limbs, head and neck and thorax, already dissected.

The abdominal organs were found to be normally located, but the liver was enlarged and very hard, and its surface was uneven. The spleen was enlarged, reaching down into the pelvis.

While studying the colon the caecum was found to be very short and subhepatic in location. It had two completely separated appendices attached to it.

One appendix was relatively long and in the normal anatomical site, i.e., within 3cm of the inferior and distal end of the ileum, and was connected to the posteromedial wall of the caecum (retrocaecal). It was 8cm long and attached to the lower part of the mesentery of the ileum by a short meso-appendix. Its lumen, was patent and opened into the caecum through an aperture below the ileo-caecal valve.

The second appendix, was smaller, and shorter than the first, being 4cm in length and situated within 1cm of it, at its proximal end, and related distally to the anterior teniae of the caecum. Its meso-appendix was short, and close to the caecum it joined the mesentery of the first appendix. Its lumen opened into the caecum as tiny, barely noticeable hole, close to the opening of the first appendix. A small guide could pass through it.

No other anomaly was noted on further dissection or study of this cadaver, other than the fact that the hepatic artery did not arise from the coeliac trunk but 5mm from it from the anterior aspect of the anterior abdominal Aorta, its course and relations were, however, normal.

Discussion

Variations in size and position of the appendix are common, but duplication of the appendix is quite rare and the incidence is 0.004% according to FALLBERICH and HETSCHEL².

ADAMS-RAY (1940), in an extensive review on the occurrence of double processus vermiformis pointed out that, although duplication of the appendix is extremely rare, it is not of that degree or rarity that it should be left unregarded either by the surgeon or by the medico-legal expert.

GUPTA and KAK³ (1964), reporting a case of double appendix, disclosed that their search of the literature, revealed less than 50 cases, and quoted the case of PICOLI (1892), who reported the first example of appendix duplex in a female infant who had a double appendix associated with duplication of the entire large bowel, two separate unicornuate uteri with two vaginae, extropy of the bladder, and an omphalocel.

STERN, in 1951 reported a case of Appendix Duplex, at autopsy, on a mature female cadaver, and noted that this variation may occur in the absence of any other congenital abnormality.

A few more case reports recently have appeared WIELARD¹⁰ and KUKRETI⁶ and UPADHAYA).

BROWN¹ (1957) reported the radiological finding by barium enema of duplication of the caecum and appendix in a 44years old Negrowoman.

WALLBRIDGE⁷ (1962) recorded the finding of a double appendix at operation on a patient suffering from acute

appendicitis with a single caecum. Only one of the appendices was inflamed at operation, He classified duplication of the vermiforme appendix. as follows:

Type A.-A single caecum and one appendix exhibiting various degrees of partial duplication. Duplication may be at the proximal end, or the middle, (WATT's case⁹ 1959) or the two lumina may be separated by a fibrous septum lined with mucosa on both sides. (ROENBERGER's case - 1903).

Type B.-A single caecum with two completely separate appendices. This group is further subdivided into two types:

Type B1, which called the "bird-like" type due to the resemblance to the normal arrangement in birds (in which there are two appendices symmetrically placed on either side of the ileocaecal valve).

Type B2, which is called the "tenica colic" type where one appendix comes off the caecum at the usual site, whereas the other, which is usually rudimentary, arises from the caecum almost always along the lines of the teania at a varying distance from the first⁸. Our case is an example of this type. (Figure 1).

Type C-A double caecum each bearing an appendix.

Many theories have attempted to explain the cause of this condition of duplication of the appendix including the following:

1-Two appendices to arise from a single caecum, is due to the persistance of a second transient appendix appearing in a 10-mm embryo. (KELLY, H.A. A-and HERDON⁵, 1905).

2-It is a phylogenetic reversion on the paired caecal arrangement found in birds. (MITCHEL 1905).

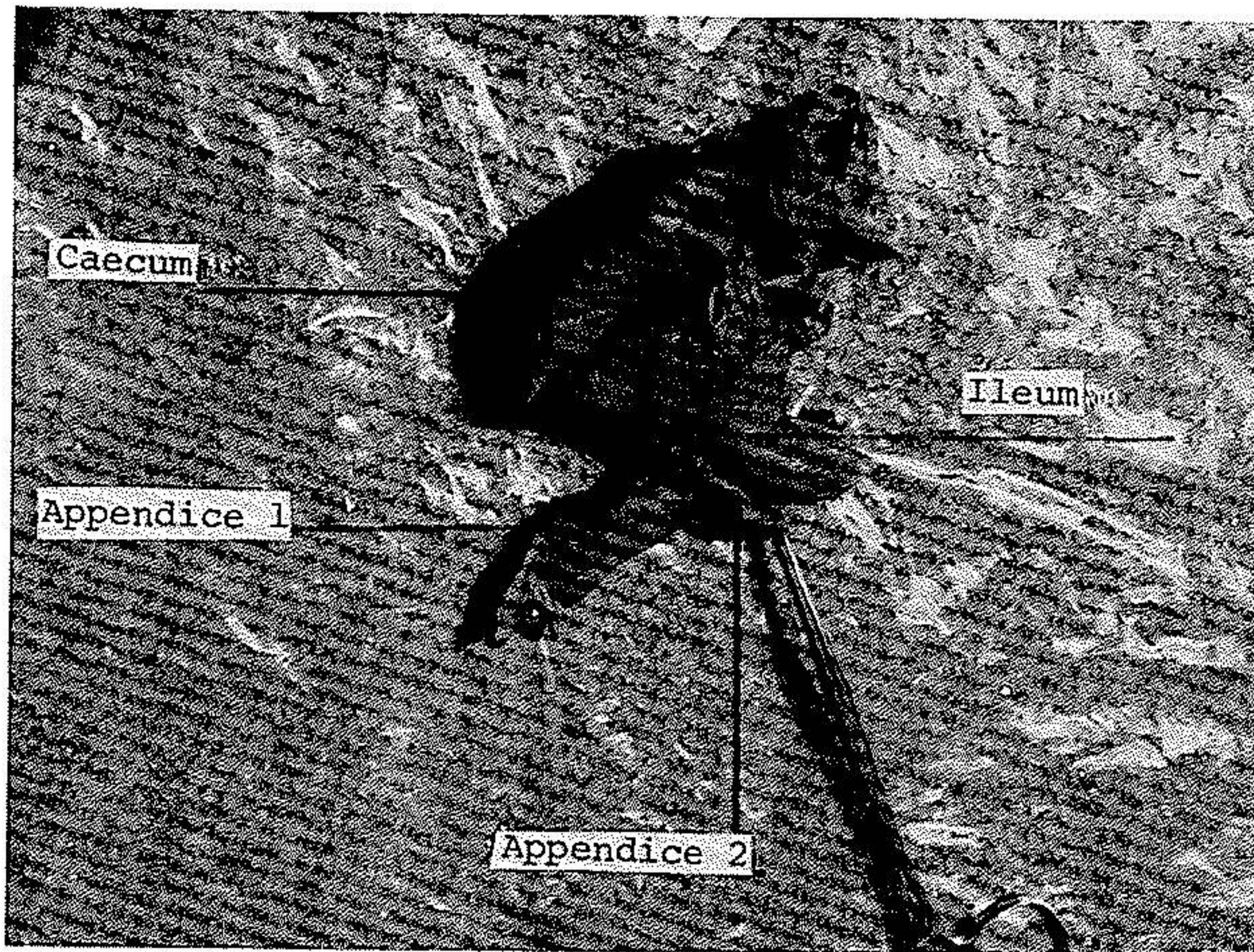


Fig. 1.

3- The condition is due to some disturbance in the organs controlling the development of the appendix.

4- Major duplication of the hindgut and lower urinary tract is due to partial twinning or incomplete fusion of the two individuals.

5- A helikoidal growth of epithelium occurs in a clockwise direction from the pharynx to the caecum and in a counter-clockwise direction from the caudal end of the hindgut to the caecum. At the junction of these two spirals, the epithelium projects inside to form a septum which persists and divides the appendix completely or partially.

Note on embryology of the appendix vermiformis

The caecum and appendix arise, in embryos of about

12-mm. crownrump length, as a small conical projection on the anti-mesenteric border of the caudal limb of the umbilical loop near its apex. The basal part of the conical projection grows more rapidly than its apical portion and forms the caecum. The apical portion becomes the appendix. There is however, no sharp boundary line between the caecum and the appendix, so that the latter appears as a conical projection from the former and is its morphological apex. At birth the caecum and appendix have still this foetal form. After birth that part of the caecum on the lateral side of the appendix undergoes considerable growth, while that part of the caecum medial to the appendix does not expand or may even regress (Hamilton, Boyd, and Mossman⁴, 1962).

Summary

An appendix duplex was found on a routine dissection, in the dissecting room of the Anatomy Department of the Faculty of Basic Medical Sciences of the University of Tehran. No other anomaly was noticed on the cadaver.

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