

MORGAGNI HERNIA WITH PECTUM CARINATUM IN A MALE CADAVER

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ABSTRACT

We present a case of 74-years old male cadaver in which morgagni hernia and associated pathologies was observed during the routine dissection. Besides the hernia, pectum carinatum, sliding hernia and hydronephrosis at the right kidney were strike findings as an associated anomalies. Morgagni hernia is the rarest one among all the diaphragmatic hernias, associated with serious anomalies. Since it has a clinical importance, precise anatomical occupation and definition of this variation on a cadaver as well as the associate anomalies is being reported by comparing with other related literature, to establish occurrence pattern and importance of the operational base of morgagni hernia.

KEY WORDS: Retrosternal Hernia, Morgagni Hernia, Congenital Anomalies, Cadaver.

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INTRODUCTION

The morgagni foramen is a potential anatomic space lying between the sternal and costal fibers, at the anterior part of diaphragm. During the fetal life, agenesis of the sternal or costal parts cause more wide opening than normal. Morgagni hernia (MH) occurs by passing through the abdominal internal organs to the thoracic cavity, as a result of the anterior part of any diaphragmatic congenital developmental defect.^{1,2} This variation was first described by Morgagni in 1761 and by Larrey in 1829 re-

spectively.³ MH are associated with a peritoneal hernial sac almost in all cases,^{4,6} and it frequently contains migration of specific organs.⁷ Various significant congenital anomalies are frequently associated with MH.^{8,9} During the clinical examination, apperance of the lung x-ray of MH may lead to misdiagnosis especially with infections which occur at right cardiophrenic region, tumors or any mass.¹⁰ Also this variation has an enlarging potential with advencing age, This makes the operational intervention necessary by accurate diagnose and timing.¹¹

Considering the clinical importance, since MH variation is a rare, associated with serious anomalies^{8,9} and particularly it is rarely encountered on a cadaver, it still need to be documented on the cadaveric cases. Purpose of this study was to report occurrence pattern and to establish exact anatomical definition of this variation for various clinical situations.

CASE REPORT

This case was a 74 year old male cadaver. During the routine abdominal dissection it was

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Fig-1: Hernial opening of sac and its contents in a 74 year-old-male cadaver (TC: Transverse Colon, OS: Opening of the Hernial sac).

observed that major omentum and transverse colon could not be found in its normal anatomical location. Approximately 20 cm part of the transverse colon was passed through to the thoracic cavity from the opening of diaphragm. It was detected that the transverse colon had migrated into hernial sac from the opening that occupied at the right front side of diaphragm and was 12cm deep. Opening was the oval shape occupied at the right side from the mid-line at retrosternal region. Antero-posterior diameter of the opening was 5.5cm, transverse diameter was 6.5 cm (Fig 1).

Since herniation was believed to have occurred from the defect in sternocostal trigon at the retrosternal region and presence of the hernial sac helped made precise MH diagnose. In addition, considering the associated pathologies with MH^{6,8,11} detailed evaluation was made for each organs which occupied abdominal and thoracic cavity. It was observed that hydronephrosis of the right kidney, but no other pathology at the abdominal cavity (Fig 2). Following the thoracal dissection, it was determined that the prominent impression at the mediastinal surfaces of the lung which was caused by sac, heart was deviated to the left. There was no relation between the sac and pericard (Fig 3). Oesophagogastric junction was passed through into the thoracal cavity and upper part of the stomach was made wider. This appearance was in accordance with the sliding hernia among the

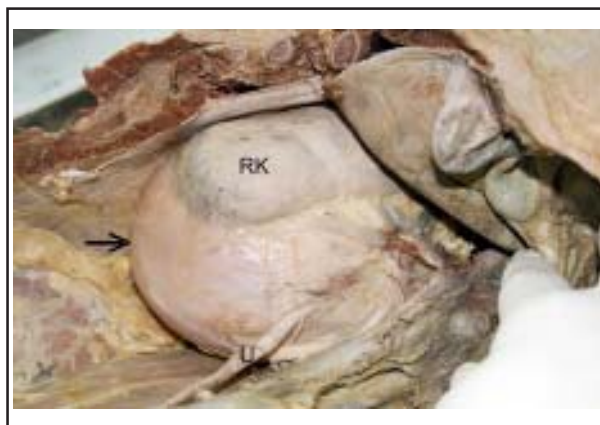


Fig-2: Hydronephrosis of the right kidney (RK: Right Kidney, Arrow: Shows hydronephrosis)

hiatal hernias (Fig 4). Detailed dissection of great vessels, and heart did not show any anomaly. Other important observation was pectum carinatum dephormity carecterised by the specific apperance; sternum and costal cartilages showed prominece towards the front, and pressing wall side of the thorax .

DISCUSSION

It is reported that a congenital diaphragmatic hernia occurs in approximately one per 2000 pregnancies. MH type is result from an anterior defect in the diaphragm unlike that Bochdalek hernia¹², and there is insufficient merging of the sternal and costal parts and origin of the diaphragm, at the stage of 8th-10th weeks of fetal life.^{13,14} In addition it is stated that the MH is the rarest variation among all congenital diaphragmatic hernias,^{1,12} accounting for only 2% of the congenital diaphragmatic defects.⁹ It is found that prevalence of MH is equal between male and female,^{8,14} In contrast to this concept Flotter R and Lopez C reported that males are usually affected more than females and etiology is obscure^{15,16}. In a study carried on MH, Berman et al reported that it was encountered in only 18 MH cases which included 40 years research period in a retrospective study¹⁴. In another study Pokorny et al, stated four MH among the total of 74 cases who had congenital daphragmatic hernia⁸, Snyder et al reported only one case of MH of 77 subjects with congenital daphragmatic hernia.¹⁷

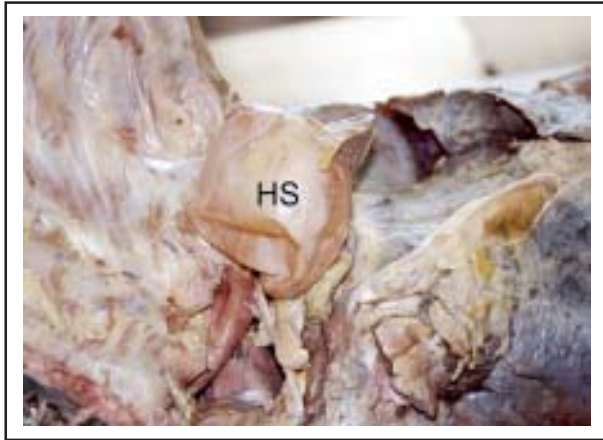


Fig-3: Occupation hernial sac in the thoracic cavity in a 74 year-old-male cadaver (HS: Hernial sac).

Although MH is mainly the midline lesion, and because left sided defect is generally discovered by the heart and pericard, passing the abdominal internal organs into the thoracic cavity occur from the right side of the sternum in 90% of the cases. While 8% of herniation occupies left side of the sternum, it shows 2% bilaterality.^{13,14} Our observation was compatible with the above mentioned literature and MH was at the right side of the sternum.

Pokorny suggested that their cases were symptomatic and presented with tachypnea, dyspnea, and cyanosis which was similar to the presentation of Bochdalek hernias seen during infancy.⁸ As a morphological feature 95% ratio, peritoneal sac presents in the MH cases,^{4,5,14} and presence of this sac is an important criteria to distinguish MH from the Bochdalek hernia.⁷

As a rare condition it can be seen as a connection between the sac and pericard. Abdominal organs which shows herniation into the pericardial cavity can be due to sudden death as a result of cardiac tamponade.¹⁸ In our case sac depth was 12cm, antero-posterior diameter of the opening was 5.5cm, transverse diameter was 6.5cm on diaphragm, but there was no relation between the sac and the pericard (Fig 1, Fig 3).

In another study carried on the medical records of infants at the King Fahad Hospital of the King Faisal University, following the elective repair by an abdominal incision, the defects of hernias detected and showed variation

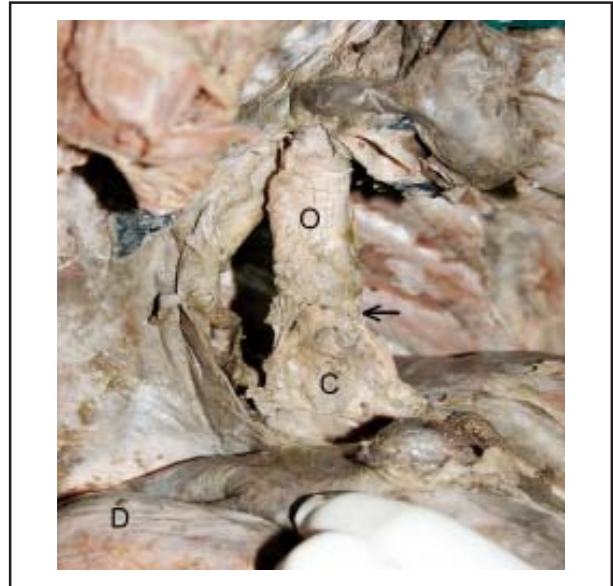


Fig-4: Sliding hernia (O: Oesophagus, C: Cardia, D: Diaphragm, Arrow: shows Oesophagogastric junction).

between 5cm and 10cm⁶, Similarly Vranes et al measured diameter of the interest region on the case when they operated as 7cm x 3cm.¹⁹ In comparison with our findings there was no significant differences in the above mentioned literature in diameters.

Specific organs such as the transverse colon, liver, epiploon but, rarely stomach, small bowel, pancreas and gallbladder may also show migration into the hernial sac.⁷ In our case 20cm part of the transverse colon was into the hernial sac, but it could not be observed in greater omentum.

Herniated organs have risk of strangulation and incarceration.^{2,20} Furthermore, since the sac has rupture and enlargement potential, surgical intervention should be performed once MH is diagnosed without delay.^{11,21,22} Associated anomalies with MH stated are dextracardia, ventricular septal defects, pulmonary venous return, tyrisomi 21, omphaloceles⁸ and, pectus carinatum, genitourinary anomalies.⁹

In this study, pectus carinatum was detected with its specific features that the sternum and costal cartilages were prominent towards the front, and pressing wall side of the thorax. Hydronephrosis of the right kidney (Fig 2), prominent impression at the mediastinal surfaces of

the lung which is caused by sac and sliding hernia (Fig 4) were other observed pathologies on the cadaver, but great vessels, and heart showed no anomaly.

While most of the cases with MH are asymptomatic or may lead to mild complaint of gastrointestinal symptoms in adult, it may cause severe respiratory distress or lung infections during the infancy, Therefore in case of recurrent lung infections during the infancy and, air-fluid levels in the retrosternal space or anterior cardiophrenic masses in adult, presence of MH should be considered besides other associated anomalies⁸. Thus clinical awareness early diagnosis and surgical treatment are important to avoid serious pathologies that may occur later on.

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