

# Case Report: 16 months old boy with only pectus excavatum and incidentally discovered MORGAGNI HERNIA via a virtual clinic

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**Abstract:** Morgagni hernia (MH) is an unusual congenital herniation of the abdominal content through the triangular parasternal gaps of the anterior diaphragm. They are commonly asymptomatic and right sided. And being asymptomatic in most of the cases the global number of such cases are discovered incidentally via the radiological assessment (by CXR, CT scan or MRI) more than the clinical assessment especially in children's whom anatomically their chest size is smaller than adults which make it sometimes difficult to elicit the positive signs of DH by the percussion and auscultation. Here I am presenting to you this interested case of an incidentally discovered DH (MH) in a toddler whom presenting complaint was only PE ( A type of external chest deformity that sometimes we face in the clinic ) and not only that , The surprising thing that the counselling with patients mother had been done via a telephone call among the beginning of COVID-19 curfew era without examining the child clinically, After which an incidental CXR found to be with MH ,The big question here shall we do a CXR for any tiny chest deformity ( One of them PE) despite the usual reassurance we are hearing from most of the paediatricians to the parents about such deformities or not?

**Keywords:** C-19CF: COVID-19 curfew, CXR: Chest x-ray., CDH: Congenital diaphragmatic hernia., DH: Diaphragmatic hernia., ECMO: Extracorporeal membrane oxygenation., FU: Follow up., MH: Morgagni hernia., (PA&LA V): Poster-anterior and Lateral View., PC: Pectus carinatum., PE: Pectus excavatum., PHC: primary health Centre., POP: Post-operative., TO: Tracheal occlusion.

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## 1. INTRODUCTION

PE (PECK-tuss ex-kuh-VAW-tum) is a condition that causes a child's chest to look sunken or "caved in." It happens because of a defect in the tough connective tissue (cartilage) that holds the bony part of the ribs to the breastbone. The cartilage pushes the breastbone (sternum) inward. The condition is also called "sunken chest" or "funnel chest."<sup>2</sup> (Figure 1).

The PE estimated to have an occurrence of 1 in 40 to 1 in 400 individuals across different cohort studies with an incidence of five times higher in males than females. Approximately half of these children have at least one family member with other thoracic abnormalities<sup>3</sup>.

PE may be mild, moderate, or severe. The lower half of the breastbone may press on the heart and lungs. This can cause shortness of breath with exercise particularly if moderate to severe type. PE does not always cause other symptoms, especially before the teen years<sup>4</sup>. Moderate-to-severe cases also can cause:

- 1-Trouble breathing when playing certain musical instruments like brass or woodwind
- 2-Concern with body image
- 3-Breathing symptoms may happen when the breastbone becomes more indented and nudges the heart to the left.
- 4-Rapid heartbeat or heart palpitations

5-Recurrent respiratory infections.

6-Wheezing or coughing

7-Chest pain

PE occurs more often in childrens who have:

1-Marfan syndrome

2-Ehlers-Danlos syndrome

3-Osteogenesis imperfecta

4-Noonan syndrome

5-Turner syndrome

The opposite condition to PE, called pectus carinatum (PC), is when the chest bows outward. (Figure 2).

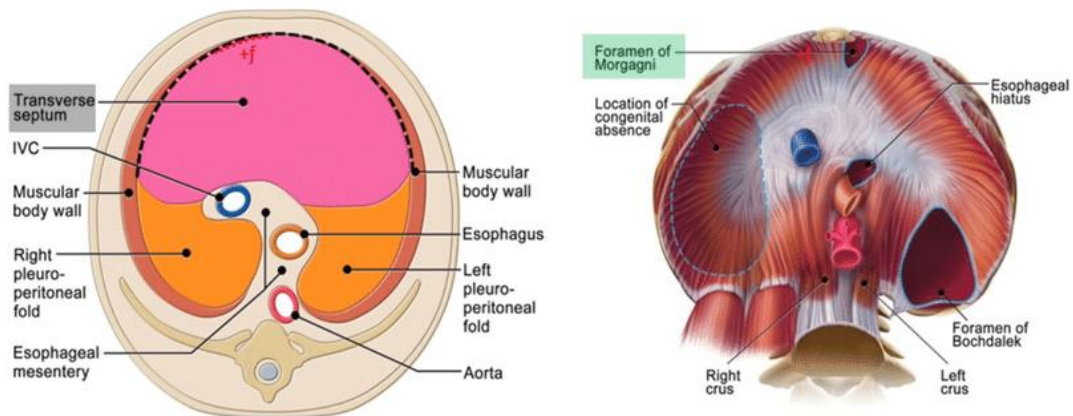


**(Figure 1: Picture of the Pectus Exvatum ).**



**(Figure 2: Picture of the Pectus carinatum).**

As for MH, is a rare form of congenital diaphragmatic hernia with a prevalence of 2–3%. It occurs due to a defect on the anterior part of the diaphragm, which allows abdominal organs to penetrate the thoracic cavity. This condition can be detected during fetal life by routine ultrasonography or late during adult life. Late diagnosis of this condition in adults is extremely rare. According to my previous Medline search, only a few cases of symptomatic hernia in adults have been reported so far. Surgery provides definitive treatment for patients with MH; it is always recommended for symptomatic and asymptomatic children patients to avoid future complications such as volvulus, small bowel obstruction, incarceration, or strangulation<sup>5</sup>. (Figure 3).



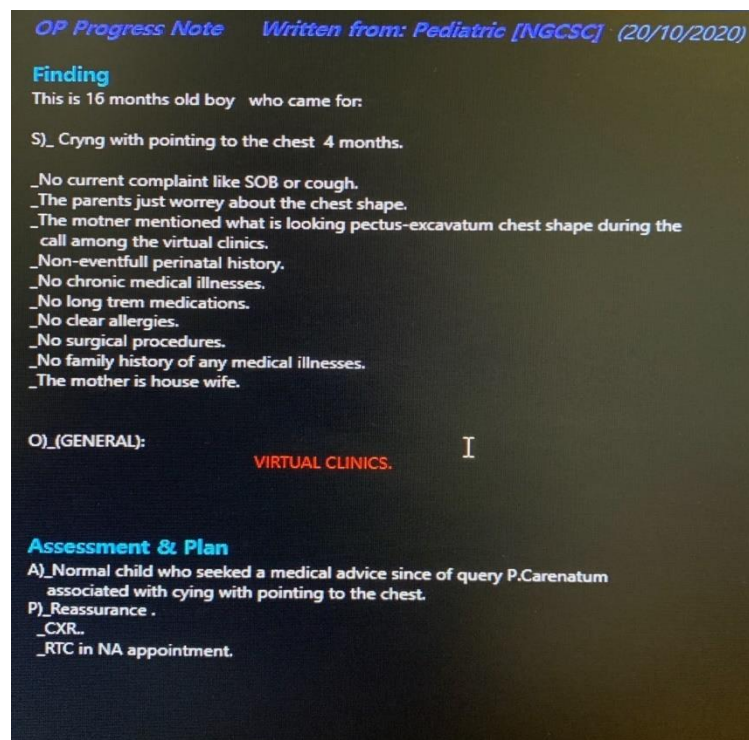
(Figure 3: Picture of the potential site of the Morgagni Hernia lighted by the green colour).

## 2. CASE PRESENTATION

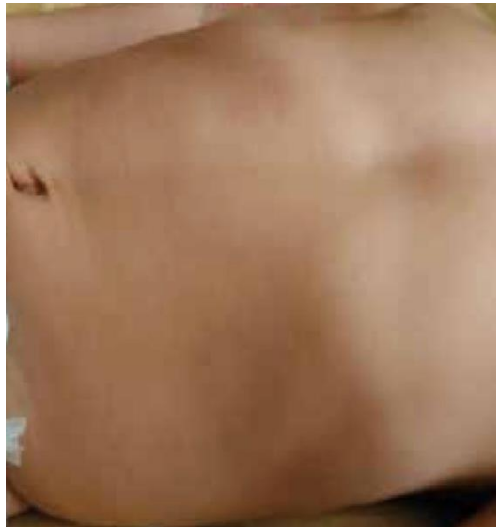
A 16-month-old boy whom mother contacted me by the phone via the early era of the COVID-19 pandemic months with a concern of chest deformity that he delivered with, and she sought a medical advice two times with a paediatrician about such concern, but both reassured her, and they discharged the child without any further FU.

And according to our medical institution policy during the C-19CF if necessarily it was possible for the medical staff to use the emails or other social media to deliver any unclear medical signs what was replacing the bed-side clinical examination the thing that was imposed by the circumstances of the crisis, (Figure 4).

The mother and via WhatsApp sent to me the chest picture of the child (Figure 5), which showing a sign of chest deformity of PE. The mother after that reassured from my side and the situation explained but since of the long-term anxiety of the mother about her child



(Figure 4: Picture of the first appointment progress note via the virtual clinic-KAMC<sup>1</sup>).

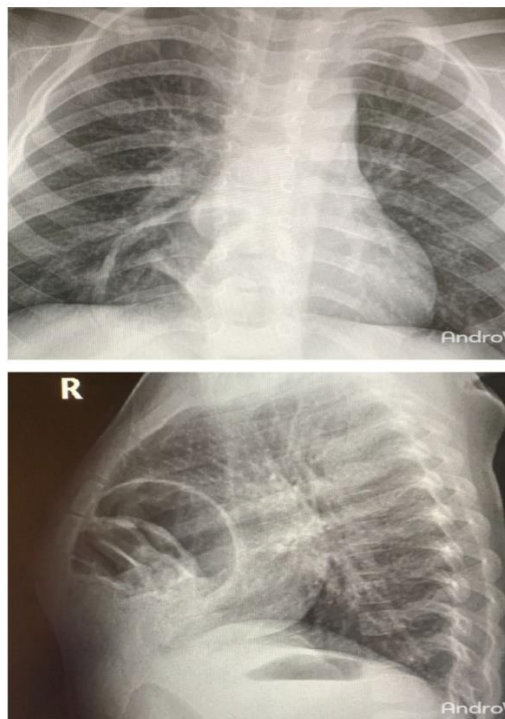


(Figure 5: Picture of the patient chest).

situation I decided to offer CXR (PA&LA V) and according to the instructions imposed from our PHC the x-rays done and the results came shocking and unexpected.

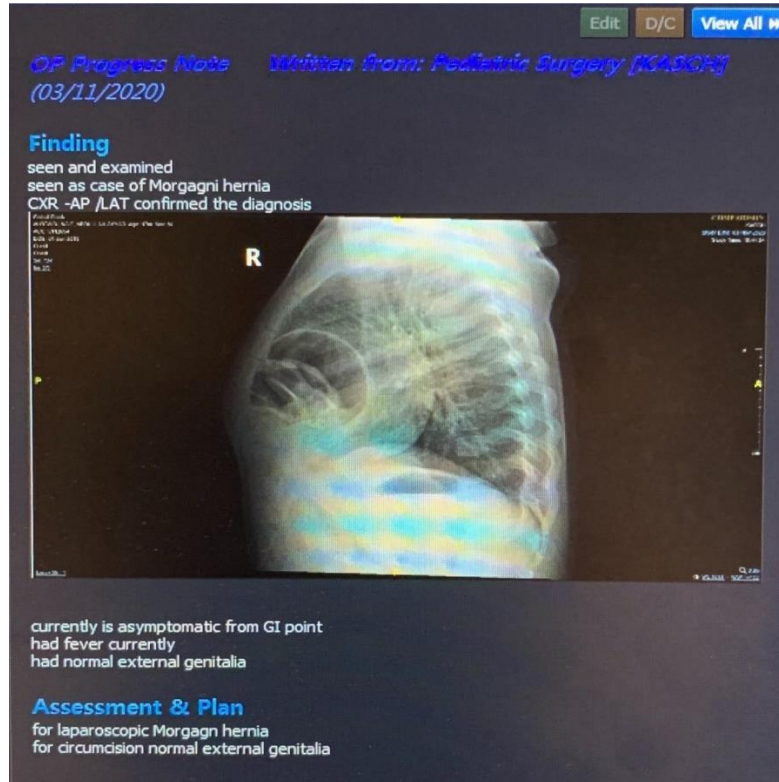
This is the CXR films pictures of the two views (PA&LA V) in (Figure 6), That came with the following findings:

- \*There is part of the colon is herniated in the right lower chest.
- \*The cardio mediastinal silhouette appears unremarkable.
- \*The lungs are clear. No pleural effusion or pneumothorax.
- \*The visualized osseous structures and upper abdomen are unremarkable.
- \*The case was flagged in the peervue system as unexpected findings.

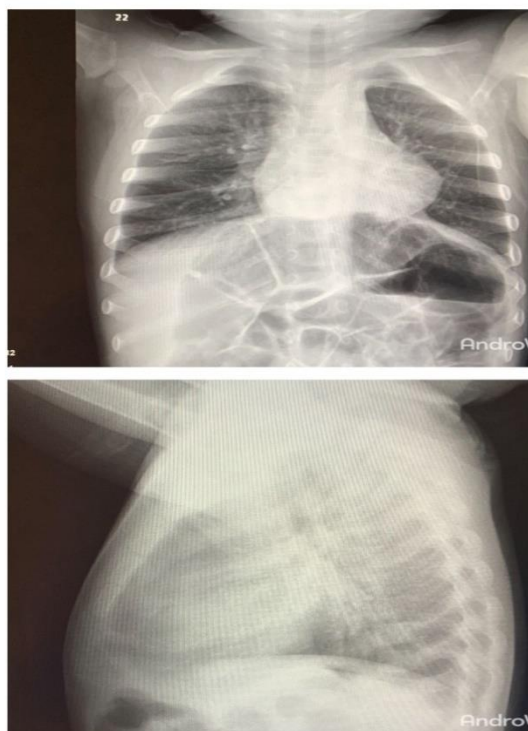


(Figure 6: Picture of the preoperative chest x-ray for the PA & LA views-KAMC<sup>1</sup>).

In the FU with patient the mother talked about the results and also about the importance of immediate referral to the paediatrics surgery who are reviewed the films of the CXR and recommended the nearest admission for the MH correction to save the child life as shown in (Figure 7), With the subsequent FU, POP, CXR films (Figure 8).



(Figure 7: Picture of the first progress note written by the paediatric surgery-KAMC<sup>1</sup>).



(Figure 8: Picture of the Postoperative chest x-ray for the PA & LA views-KAMC<sup>1</sup>).

### 3. DISCUSSION

• Most of the reported cases of the either DH (MH) or that ones of the PE or both in the same time (in the same literature even) did not show an accurate numbers of how frequent is the association that exists between the PE and DH (MH) except one article written and updated by (Reshma M Biniwale on Jan 30, 2020 at the E'Medicine website under the title of '*Chest wall deformities*'<sup>6</sup> who mentioned how occasionally the DH(MH) coexists with PE? And that thing (*according to him*) may be explained by the overgrowth of costal cartilage, which displaces the sternum posteriorly that indirectly lead to the occurrence of the DH(MH). Otherwise, the whole articles I reviewed relating the coexistence of the DH(MH) with PE were talking about the opposite i.e., they were reporting only the possible long term PO complication of remarkable PE that happens after the DH surgical correction like here in the following articles:

• 1-Pediatr Surg Int (2009) 25:1–17DOI 10.1007/s00383-008-2257-y,4 under the title of '*The long-term follow-up of patients with a congenital diaphragmatic hernia: a broad spectrum of morbidity*', that concluded the following: Despite new therapeutic strategies including ECMO, inhalation of nitric oxide, high frequency oscillation and fetal TO, mortality rate of CDH remains high. Several studies have documented significant long-term morbidity one of them is the PE<sup>7</sup>.

• 2- Journal of Paediatric Surgery CASE REPORTS, under the title of '*Minimally invasive repair of pectus excavatum in a 17-year-old boy with a history of congenital diaphragmatic hernia and lack of Pericardium*', J Ped Surg Case Reports 9 (2016) 40e42<sup>2</sup> that mentioned: A 17-year-old boy with a history of congenital diaphragmatic hernia and hypoplastic left lung visited our clinic three years ago. The patient underwent diaphragmatic hernia repair one-week post-partum. In the following years, the patient developed pectus excavatum with asymmetric anterior wall in disadvantage of the left thoracic wall and a scoliosis<sup>8</sup>.

• 3- Pediatr Surg Int. 2019 Nov;35(11):1265-1270. doi: 10.1007/s00383-019-04548-4. Epub 2019 Sep 3,<sup>3</sup> that concluded the following: Although there was a trend toward an increased risk of the pectus deformities and the scoliosis in patients repaired with muscle flap during the DH repair, it did not reach statistical significance. There is a correlation between musculoskeletal complications; Outcome; PE; Prosthetic patch, Scoliosis<sup>9</sup>.

So, from the previous mentioned statements you can't imagine how percentage of the coexisting CDH (which is a fatal condition if missed) with each PE patient we see in the daily clinic especially with this recorded prevalence of such deformity in childrens and despite of that no fixed mentioned criteria of doing a further radiological study for those childrens who comes with PE in most of the paediatrics references and books and what done in some cases just were an individual judgments like what I have done in such case report and by which incidentally I discovered this CDH despite I did not examined the patient on the bedside since of C-19CF.

Lastly imagen all of you that I did not decide to do such CXR for this patient what will be his medical carrier?

### 4. CONCLUSION

From the cinereous of the mentioned case as a paediatrician (or even general practitioner doctor) my recommendation don't turn a blind eye in any children with PE and don't hesitate in doing a radiological assessment for that to roll out any missed serious cardio-thoracic anomalies.

#### Rationale for consent of the patient's family to publish the case:

The patient's father talked about all the rationales behind publishing the case in this medical journal and he agreed on that and signed on a paper that kept secretly in our institution's medical records to respect the patient's privacy and for any unsuspected further medico-legal claims from the family side.

### REFERENCES

- [1] All attached figures and marked as KAMC' taken from our main official operating computer system screens in KAMC (National Guard Hospital).
- [2] Seattle Children's Website.
- [3] US National Library of Medicine National Institutes of Health website, Published online 2020 May 7. doi: 10.1371/journal.pone.0232575.

**International Journal of Novel Research in Healthcare and Nursing**

Vol. 8, Issue 2, pp: (352-358), Month: May - August 2021, Available at: [www.noveltyjournals.com](http://www.noveltyjournals.com)

- [4] Kid's health website, reviewed by: Andre Hebra, MD Date reviewed: June 2018.
- [5] J Med Case Rep. 2020 Jan 18;14(1):13. doi: 10.1186/s13256-019-2336-9.
- [6] <https://emedicine.medscape.com/article/906078-overview>.
- [7] <https://pubmed.ncbi.nlm.nih.gov/18841373/>
- [8] <https://www.infona.pl/resource/bwmeta1.element.elsevier-c2706608-ee27-3714-957f-85b624e4d607>
- [9] <https://pubmed.ncbi.nlm.nih.gov/31482324/>