

Intraabdominal and intrafascial heterotopic ossifications following repeated abdominal surgeries: Case report

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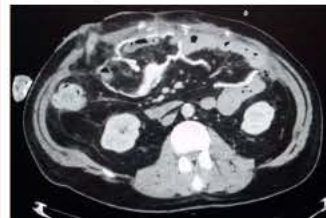
- Heterogenous cases of abdominal heterotopic ossification have been reported resulting from prior abdominal surgeries, trauma, and burns leading to benign ectopic bone formation within soft tissues.
- Closely related processes and terms are:
 - Heterotopic ossification (HO)
 - Intraabdominal myositis ossificans (IMO)
 - Heterotopic mesenteric ossification (HMO)
 - Mesenteritis ossificans (MO)
 - Myositis ossificans traumatica (MOT)
- Aberrant differentiation of progenitor cells into osteoblasts and osteocyte secondary to inflammation is thought to cause HO (1) (2).

Case Summary

- Middle-aged man with CAD, recent DVT, and a history of surgically treated diverticulitis presented for elective colostomy reversal.
- Past surgical history included:
 - Open sigmoid resection with primary anastomosis for diverticulitis. Primary umbilical hernia repair was also performed at this time.
 - His hospital course was complicated by perforated anastomotic site requiring exploratory laparotomy, resection of anastomosis, and discontinuity, followed by additional washouts, and eventually an ostomy formation.
 - Unfortunately, his course was further complicated by necrotic colostomy leading to colostomy takedown and subsequent transverse colectomy with end colostomy and abdominal closure.
- After a long hospital course, patient felt well, was discharged, and now desired a colostomy reversal.

Findings

- During the colostomy reversal:
 - At least 30 separate pieces of heterotopic bone formation were encountered within the interloop spaces and removed from the patient's abdomen, some of which exceeded 10cm x 10cm in size.
 - Patient underwent extensive lysis of adhesions and continuity was regained.
- 6 months later, the patient underwent a colonoscopy with dilation of anastomotic stricture.
- 7 months later:
 - He underwent ventral incisional hernia repair which allowed for inspection for remaining heterotopic ossification.
 - Only a single area of ossification was present towards the upper aspect of the fascia.



Pathology results: fragmented parenchymal tissue with extensive metaplastic trabecular bone formation and no evidence of neoplasm.

Discussion

- This case is unique due to the number and size of the bony material removed from the patient's abdomen.
- Surgery is the first line treatment option, but consensus can not be found regarding early or delayed excision (3).
- Although other prophylactic treatment options are available in the orthopedic world (1); NSAIDs, radiation therapy, glucocorticoids, and bisphosphonates are not recommended for abdominal heterotopic ossification (4).
- Osteosarcoma is an important differential diagnosis (5).
- As proposed by a previous case report (6), open abdomen can be a possible risk factor for the development of heterotopic ossification.

- (1)Hwang, C. D., Pagani, C. A., Nunez, J. H., Cherief, M., Qin, Q., Gomez-Salazar, M., Kadaikal, B., Kang, H., Chowdary, A. R., Patel, N., James, A. W., & Levi, B. (2022). Contemporary perspectives on heterotopic ossification. *JCI insight*, 7(14), e158996. <https://doi.org/10.1172/jci.insight.158996>
- (2)Bahmad, H. F., Lopez, O., Sutherland, T., Vinas, M., Ben-David, K., Howard, L., Poppiti, R., & Alghamdi, S. (2022). Heterotopic mesenteric ossification: a report of two cases. *Journal of pathology and translational medicine*, 56(5), 294–300. <https://doi.org/10.4132/jptm.2022.07.23>
- (3) Akinbiyi, T., & Kaul, S. (2017). Heterotopic Ossification Encountered During a Complex Ventral Hernia Repair: Case Report and Literature Review. *Eplasty*, 17, e29.
- (4)Morrison JE, Brizendine JB, Yost MJ, Fann SA. Massive ventral hernia with extensive heterotopic ossification: the honeycomb-abdomen. *J Trauma*. 2009;66(4):1234-1237. doi:10.1097/01.ta.0000241019.05076.c7
- (5)Ferreira, C., Gomes, C., Melo, A., Tenreiro, N., Pinto, B., Moreira, H., Ribeiro, A., & Avelar, P. (2017). Heterotopic mesenteric and abdominal wall ossification - Two case reports in one institution. *International journal of surgery case reports*, 37, 22–25. <https://doi.org/10.1016/j.ijscr.2017.06.004>
- (6)Meléndez-Fernández AP, Villa-Sierra R, Góngora-Acosta AG, et al. Frozen abdomen complicated with midline heterotopic peritoneal ossification: case report. Abdomen congelado complicado con ossificación peritoneal heterotópica de la línea media: reporte de un caso. *Cir Cir*. 2021;89(1):97-100. doi:10.24875/CIRU.19001156