

## Corset Liver: A Rare Acquired Morphological Variation

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### Abstract

Morphological variations of liver are considered to be rare. Presence of such variations can have a clinical presentation involving the liver or the adjacent viscera. Accessory fissures and grooves of the liver can be either congenital or acquired. We present a case of Corset liver, a rare acquired malformation with transverse fissures and multiple grooves. Such variations should be kept in mind by surgeons and radiologists when evaluating patients of Hepatic pathology.

**Keywords:** Accessory Fissures; Corset Liver; Corset Constriction.

### Introduction

The liver is the largest abdominal organ in the human body with complex functions. It occupies right and left hypochondriac, epigastric and right lumbar regions [1]. Any variation from its normal extent leads to compression of the adjacent viscera leading to serious impact on their functions. It has been reported that some apparent morphological changes detected during advanced imaging examinations may actually be pseudolesions resulting from perfusion defects, focal fatty infiltrations and other causes, and may not represent true parenchymatous lesions [2]. However, detailed knowledge of anatomical variations in the human liver will guide the surgeons and radiologists in diagnosis and interventions related to it. We present

a case of Corset liver in which the liver is enlarged with grooves and fissures. This kind of variation is rare in occurrence and it is said to be seen in the past era.

### Case Report

In the present study, during routine abdominal dissection in a Hispanic female cadaver, an enlarged liver weighing about three kilogram with fissures and grooves on both lobes was observed. The enlarged liver was quadrangular in shape extending from right to left hypochondriac region transversely. Right lobe extended into right iliac fossa and left lower border into the umbilical region. On examination of the anterior surface of the right lobe, there was a complete horizontal fissure termed as Corset constriction (Figure 1) extending from falciform ligament to the right lateral surface dividing the right lobe into two segments. The superior surface had three oblique diaphragmatic grooves (Cough furrows or Zahn's groove) [3] which were in alignment with the overlying ribs (Figure 1).

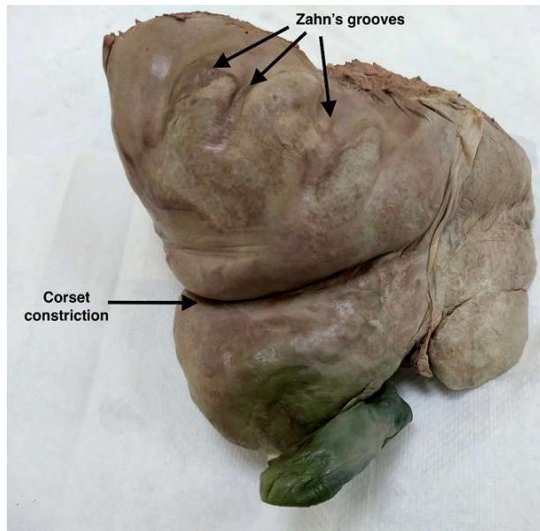
The anterior surface of the left lobe showed faint extension of the Corset constriction towards left lateral border. On examination of the visceral surface, the right lobe appeared to be smooth with absent renal impression (Figure 2). The Caudate lobe had oblique sulcus closer to inferior vena cava and another small sulcus above porta hepaticus. Quadrate lobe appeared normal. The fossa for gall bladder was absent and the bladder was attached to a narrow area. On the left lobe there were two horizontal grooves, extending from fissure for ligamentum venosum and ligamentum teres (Figure 2). Examination of other abdominal viscera, showed inferior displacement of Duodenum to L3- L4 level and coils of jejunum and ileum were pushed into the

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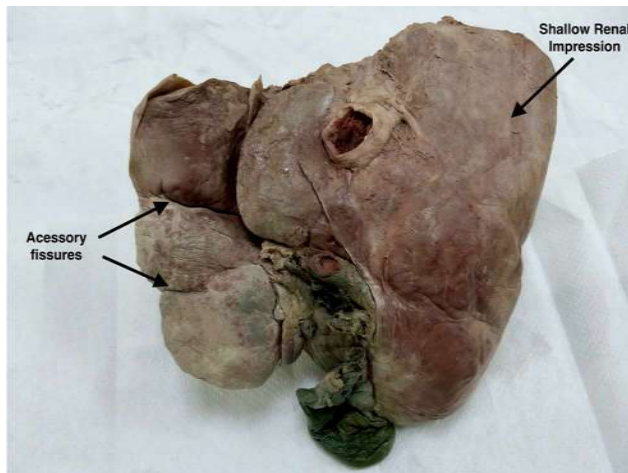
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pelvic cavity. Caecum appeared to be enlarged and colon was found occupying left lumbar and iliac region.



**Fig. 1:** Anterosuperior surface of the live showing Corset constriction and Zahn's grooves



**Fig. 2:** Visceral surface of the liver showing accessory fissures and shallow renal impression

## Discussion

Corset liver is a rare morphological variation of the liver secondary to external pressure by a tight Corset/belt which is used by females to get the desired shape or as a treatment to correct skeletal deformity [4]. So Corset liver is an acquired variation and not congenital. Morphological variations of liver lobes are commonly found in female than male. Right lobe being predominantly affected. Corset Liver is often misinterpreted as Riedel's lobe [5]. In Corset liver a well-defined transverse fissure is seen on the anterior convex surface of right lobe (Corset constriction), while Riedel's lobe is a tongue like projection of the right lateral border of liver with classical sharp medial margin [6]. On a note, both the types are hypertrophy of the liver parenchyma extending into the right iliac region.

Congenital changes in the liver are characterized by the following aspects:

- a. Lobes separated by glands;
- b. Atrophy at some locations in the parenchyma;
- c. Presence of only one lobe;
- d. Presence of multiple lobes, typically involving numerous divisions (up to 16) of the right lobe;
- e. Small lobes;
- f. Peduncular lobes;
- g. Lobes without division; and
- h. Accessory lobes. Acquired changes in liver morphology are represented by the following characteristic features:

- linguiform lobes,
- Costal organ with very small left lobe,
- Deep renal impressions and "corset" type constriction, and
- Local inflammation of the organ or gallbladder [6]. The present case shows diaphragmatic grooves, corset type constriction with absent renal impression. This makes our case a unique type of acquired morphological change in the liver.

The hepatic fissures are enigmatic and confusing because of their multiple names (eg, principal, accessory, portal fissures) [7]. Normal and accessory fissures/grooves of the liver are to be identified in any pathological conditions, as these grooves serve as landmark in hepatectomy associated with malignancies [8]. Hence, any variation from the normal morphology are important to be identified to prevent misinterpretations and unwanted interventions. In our case, three oblique grooves are seen on the diaphragmatic surface. These grooves are called as Cough furrows or Zahn's groove caused by diaphragmatic costal pressure seen secondary to the usage of Corset. Zahn reported that these grooves are seen more frequently on the right lobe and rarely on left lobe. They belong to Netter's type 6 variant.

As far as clinical implications, enlargement of the liver and downward elongation of the right lobe is of clinical importance [9]. It could be one of causes of palpable abdominal mass in the right iliac fossa [10]. Hence, while doing imaging studies on liver, importance should be given to lower border of the right lobe to know its normal extent from variants.

## Conclusion

To conclude, acquired morphological variations in the shape of the liver are of clinical importance. Corset liver is an acquired anomaly secondary to usage of tight brazing. It is characterized by the presence of Corset fissure, Zahn's groove, extension of liver parenchyma to right iliac region and displaced abdominal viscera.

Hence, information described in this article can be useful for anatomists, surgeons and radiologist. The possible presence of such morphological changes has to be kept in mind during evaluation of any abdominal pathologies.

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