

AN INCIDENTAL FINDING OF ACCESSORY HEPATIC SURFACE GROOVE (SULCI) ON THE DIAPHRAGMATIC SURFACE OF LIVER DURING LAPAROSCOPIC CHOLECYSTECTOMY: A CASE REPORT

General Surgery

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ABSTRACT

Accessory hepatic surface groove is the prominent depression on the antero-superior surface of the liver. A sound knowledge of accessory hepatic surface groove (AHSG) is important to radiologist, trauma surgeon, medical oncologist and hepatobiliary surgeon to be aware of the morphological variations on liver surface. Accessory grooves are more common in right lobe. We present a case report of accessory hepatic surface grooves encountered during laparoscopic cholecystectomy and its clinical significance.

KEYWORDS

Accessory liver groove, right lobe, diaphragmatic surface, Laparoscopy.

INTRODUCTION

Usually, liver does not possess any grooves on its diaphragmatic surface. The presence of hepatic surface grooves (HSG) has been reported by few authors in the medical literatures. HSGs are prominent vertical depressions that appear on the antero-superior surface of the liver. There is no consensus on nomenclature, since they are known by several names, including accessory sulci (Othman et al., 2008), accessory fissure (Auh et al 1984), hepatic furrows (Newell and Morgan-Jones, 2005), hepatic fissures (Lim et al., 1987) and diaphragmatic sulci (Macchi et al., 2003). A sound knowledge of anatomical variations is a prerequisite to have a favourable surgical outcome. The first description of accessory hepatic surface groove is attributed to Zahn in 1882. The so called "Zahn grooves" can be found on the diaphragmatic liver surface and predominantly on the right liver lobe. The aetiopathogenesis is still not clear. This anatomical variation may be explained by the effects of pressure of ribs and diaphragm muscle due to chronic lung conditions (Pulmonary emphysema) with cough could explain diaphragm hypertrophy which leads to this condition "Cough furrows" Another cause can be prolonged wearing of a corset – "Corset liver" or "Ribbed liver". Thus, presence of the fissures(grooves) on the liver surface may indicate an underlying condition. The prevalence of HSGs in the published series ranges from 5% in Malaysia (Othman et al., 2008), 6% in India (Joshi et al., 2009), 25% in New York, USA (Auh et al 1984), to 40% in Italy (Maccho et al., 2003). In a cadaver study of 97 livers (in 2016) by Sathesha B. et al. revealed the presence of triple grooves found in only three (3.09%) livers.

CASE REPORT

During laparoscopic cholecystectomy in a 70-year-old female, we found the right lobe of liver had three grooves on the antero-superior surface extending towards the posterior surface of liver. One of them, measured about 6cm long and extended on 1cm deep into liver parenchyma labelled as major groove. Rest two minor grooves were situated either side of the major groove (Figure 1).

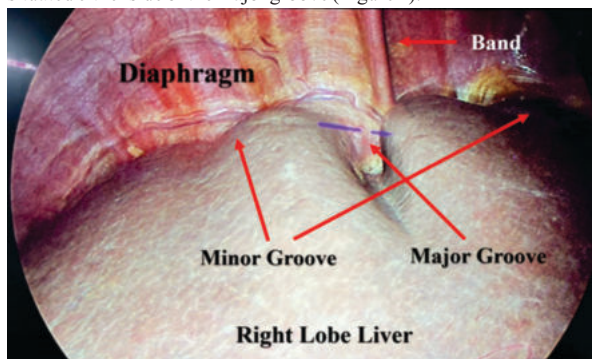


Figure 1: Three Grooves (shown By Red Arrow) On The Diaphragmatic Surface Of Right Lobe Of Liver

DISCUSSION

Accessory hepatic surface groove (AHSG) can occur over on any lobe of liver, but it is more frequently encountered on the right lobe, followed by quadrate lobe. The global incidence varies (6-53%), although data about this anomaly is not abundantly present in the literature. The incidence increases with age approaching 70% in the seventh and eighth decades. The depth of fissure (groove) may be equal or exceed 2cm in one-third of cases. Traditionally, it was understood that diaphragmatic sulci resulted from hypertrophic diaphragm muscle bands which created variable resistances and thus promoted uneven hepatic parenchymal growth (Kanchan et al., 2014). Macchi et al. by radiological imaging showed that there is a correspondence between sulci (grooves) and right hepatic vein and right portal fissure in 71% of cases. Thus, the accessory groove develops along a theoretically predictable course, corresponding to the superficial part of the right portal fissure. This area may represent a watershed between the roots of the tributaries of the hepatic veins, coming from segments VIII and VII, draining respectively into the middle and right hepatic veins. The reason for this is, probably the pressure exerted by the diaphragm as a whole but not by the individual hypertrophied branches. This condition may mimic liver malformations, nodules and tumours. It can also cause alteration of hepatic perfusion resulting in pseudo lesions on computed tomography. In case of abdominal trauma, it may give false impression of liver laceration during laparotomy or imaging studies. It may also be the reason for unnecessary surgical intervention.

CONCLUSION

Formation of hepatic surface grooves (HSGs) is a postnatal event. Knowledge of HSGs may be useful to operating surgeons during hepatic resection and liver transplantation. Radiologists must be aware of these grooves to circumvent radiologic misdiagnosis and confusions.

Conflict of Interest - None declared.

Ethical Approval - Exempted by our institution.

Patient consent - Informed written consent obtained from patient for publication.

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