



EXTERNAL MORPHOLOGY OF THE HEPATIC SPIEGEL LOBE

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ABSTRACT

The objective of this study is to determine morphological variations of the Spiegel lobe in the indigenous Senegalese subject. This study was carried out in the necropsy room of the pathological anatomy department of the Aristide Le Dantec University Hospital Centre in Dakar. It involved 39 livers of indigenous adult Senegalese subjects whose cause of death was neither liver disease nor liver trauma. On each liver collected, rinsed with water, we observed and photographed the external characteristics of Spiegel's lobe including its seat, its shape, the prominence of the caudate process, the presence or not of the papillary process, the presence of antero-posterior or transverse furrow. Spiegel's lobe was present on all livers studied. It sat exclusively at the visceral face in its retro-hilaire portion. The rectangular and ovoid shapes predated 33.33% and 30.77% of cases, respectively. The papillary process was noticed on 15 lobes of Spiegel out of the 39 studied, or 38.46% of the cases. The caudate process was present in 32 cases or 82% of the cases. We noted the presence of furrows in the Spiegel lobe in 18 subjects or 46% of the cases. On one liver, we noted the simultaneous presence of two furrows on Spiegel's lobe. Of the 39 livers studied, we noticed two cases of Spiegel accessory lobe, representing 5% of the cases. These morphological variations are very useful in the diagnosis and surgery of Spiegel lobe tumors.

Keywords : hepatic visceral face, Spiegel lobe, papillary process

INTRODUCTION

Spiegel's lobe is located behind the transverse furrow of the liver (liver door), between the furrow of the lower vena cava on the right and the venous ligament on the left (Kamina, 2017 ; Delmas, 2006). Currently, there is some confusion about the difference between the caudate lobe and the Spiegel lobe. Thus, since the work of Couinaud who had attempted to locate the caudate lobe in the liver segments I and IX based on vascularization, the definition and limits of the caudate lobe remain controversial. Some authors have recently attempted to divide the caudate lobe, according to the

vascular distribution, into three segments that are from left to right : the Spiegel lobe, the paracave portion and the caudate process (Kumon, 2020). Spiegel's lobe shows some morphological variations and only few studies have discussed these surface variations (Ibrahim, 2020).

The objective of this study is to determine morphological variations of the Spiegel lobe in the indigenous Senegalese subject in order to help improve anatomical knowledge in radiological diagnosis and surgery of liver tumors located in this liver segment.

MATERIAL AND METHOD

This study was carried out in the necropsy room of the pathological anatomy department of the Aristide Le Dantec University Hospital Centre in Dakar over a four-year period from May 2009 to April 2013. It involved 39 livers of indigenous

adult Senegalese subjects whose cause of death was neither liver disease nor liver trauma. On each liver collected, rinsed with water, we observed and photographed the external characteristics of Spiegel's lobe including its seat, its

shape, the prominence of the caudate process, the presence or not of the papillary process, the presence of antero-posterior or transverse furrow.

The overall shape of the caudate lobe was classified into four types: ovoid, triangular, rectangular, irregular (indeterminate).

The presence of a caudate process and a papillary process was recorded.

A papillary process was considered marked when it formed a prominent protrusion at

the anterior portion of the Spiegel lobe and/or was separated from the anterior portion of Spiegel's lobe by a partial or complete crack.

The caudate process was considered present when it formed a protruding elevation separated from the Spiegel lobe by a paracave liver portion and the right lobe by a furrow.

RESULTS

Spiegel's lobe was present on all livers studied. It sat exclusively at the retro hilar portion of the visceral face. This posterior position overflowed the posterior edge of the liver in 15.6% of cases.

We distinguished five forms of Spiegel's lobe (Figure 1). We noted the predominance of the rectangular shape, which accounted for 33.33% of cases (Figure 2). It was followed by the ovoid form with 30.77% of cases (Figure 3). The triangular shape represented 23.07% of which only three cases with a base on the left (Figure 4). It remained square in 5.12% (Figure 5) and irregular in 3 subjects, or 7.70% of cases (Figure 6).

The papillary process was noticed on 25 lobes of Spiegel out of the 39 studied, or

64% of the cases (Figure 4). The caudate process was present in 32 cases, 82% of the cases and absent in 7 cases, or 18% of the cases (Figure 7).

We noted the presence of furrows in the Spiegel lobe in 18 subjects or 46% of the cases (Figure 7). On one liver, we noted the simultaneous presence of two furrows on Spiegel's lobe (Figure 6).

Of the 39 livers studied, we noticed two cases of accessory Spiegel lobe, representing 5% of the cases. Each accessory Spiegel lobe is located in front of the main Spiegel lobe from which it is separated by a transverse furrow (Figure 8).

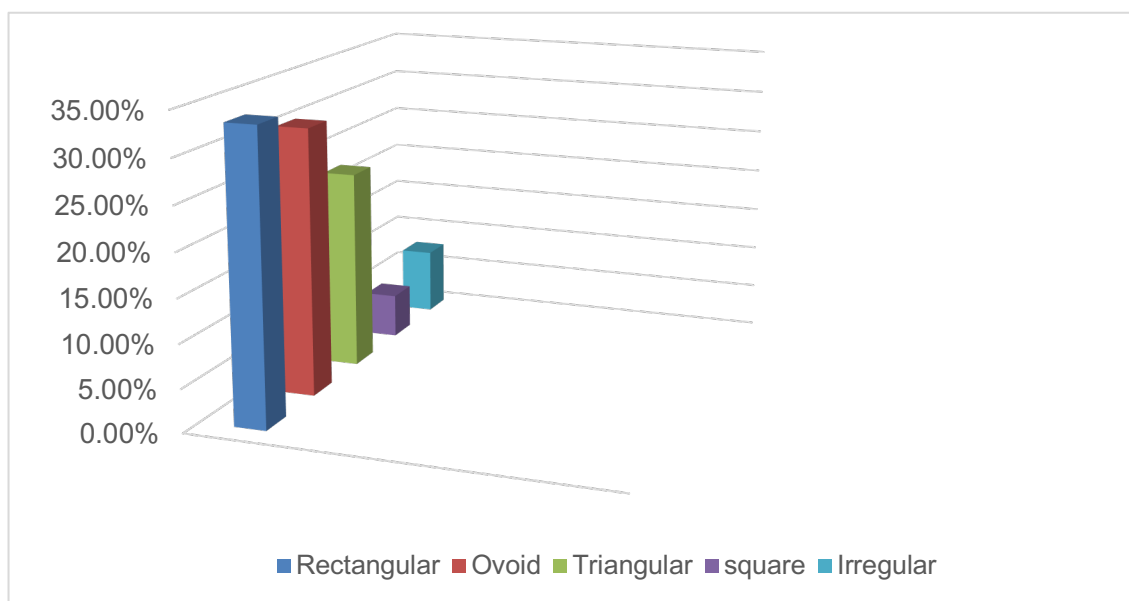


Figure 1: Different forms of Spiegel's lobe

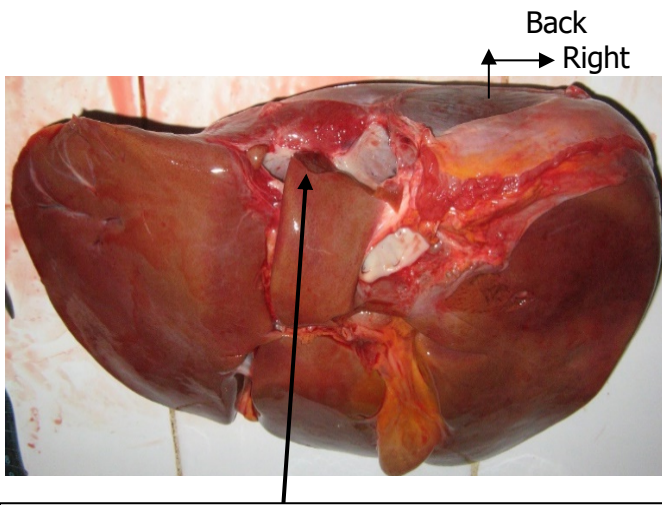


Figure 2: Spiegel lobe in rectangular shape. Rectangular shape overflowing the posterior edge of the liver

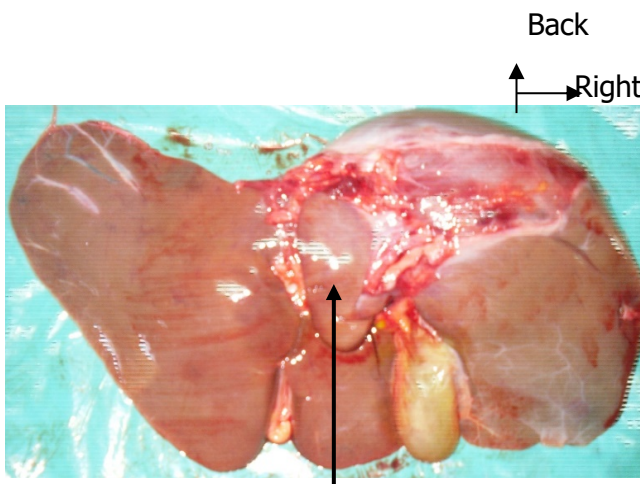


Figure 3: Spiegel lobe in its ovoid shape on the visceral face of the liver

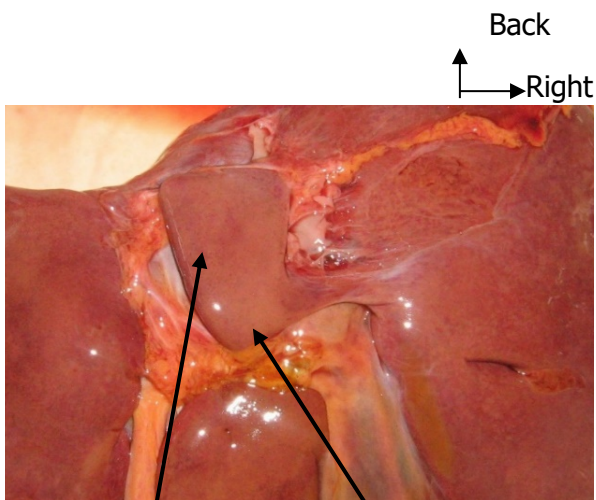


Figure 4: Spiegel's lobe in its triangular shape

Triangular shape Papillary process

Back
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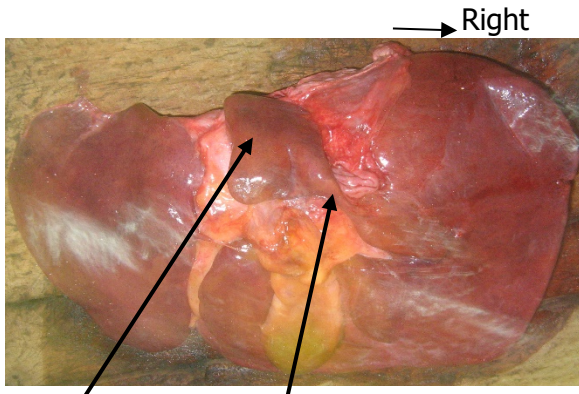


Figure 5: Spiegel lobe extended by paracava

Square-shaped Paracava portion

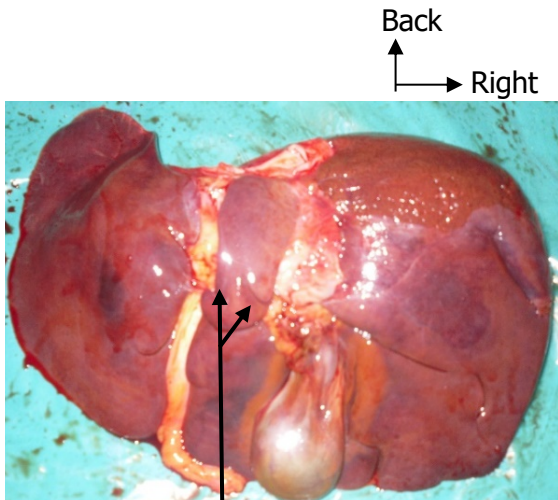


Figure 6: irregular shape of the Spiegel's lobe

Irregular shape with two furrows

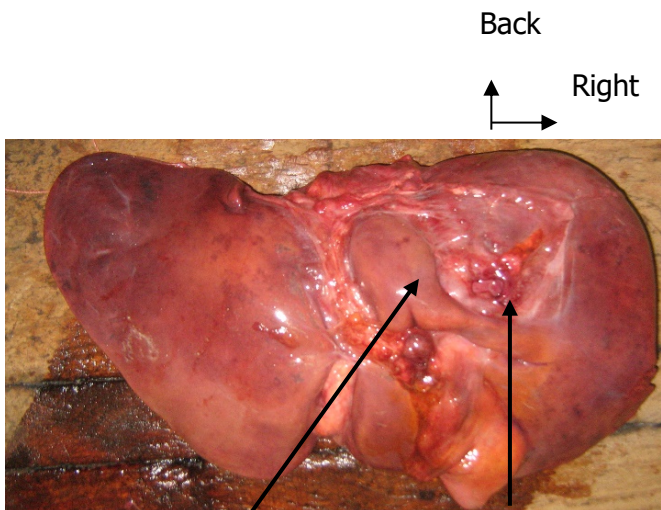


Figure 7: Spiegel lobe extended by caudate

Antero-posterior furrow Caudate Process

Back
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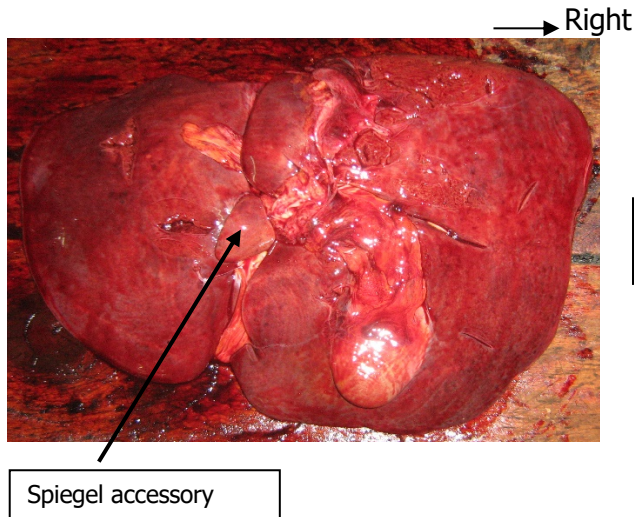


Figure 8: Spiegel's Lobe accessory separated from Spiegel's lobe by a furrow

DISCUSSION

This study on fresh subjects allows a direct and real assessment of the external morphology of Spiegel's lobe in contrast to imaging and cadaveric studies after preservation by chemicals that cause a change in the morphology of the liver. It is easy to reproduce and requires few resources. However, it does not take into account the dimensions of the caudate lobe given the diversity of its shape. The constancy of the presence of the Spiegel lobe in the morphology of the visceral face of the liver in our study is almost uns

discussed in the literature series. However, its shape and seat at the visceral face of the liver vary. Thus, we noted that Spiegel's lobe was essentially in the upper portion of the visceral face. In some cases it may overflow to reach the upper edge of the liver. This situation of the caudate lobe seems to us very important in the radiological diagnosis and in the surgery of the tumors of the lobe of Spiegel. The rectangular shape predominates slightly in our study, while in most of the literature it remains largely in the majority (Table I).

Table I : Spiegel lobe shape variations according to various authors

Authors	Shape of Spiegel's lobe					
	Ovoid	Rectangular	Triangular	Square	Irrégular	Other
Chavan and Wabale, 2014	40%	48%	4%	6%	2%	-
Sagoo et al, 2018	6%	90%	-	-	4%	-
Sarala et al, 2015	18%	48%	12%	-	16%	6%
Joshi and Sushama, 2017	5%	74%	9%	3%		8%
Ibrahim, 2020	-	73,21%	21,43%	-	5,36%	-
Reddy et al, 2017	16,25	78,75	-	-	-	5%
Our study	30,77%	33,33 %	23,07%	5,12%	7,7%	-

We noted that the papillary process is not constant. This is consistent with most of the literature (Table II). In the Nayak study (2018), only one liver (1.81%) had a

great papillary process. On the other hand, the caudate process was present in the majority of cases in our study and in the series of literature studied with the

exception of the Sarala, et al study (2017) (Table II).
where it is present only in 9% of cases

Table II: rate of papillary process prominence and presence of the caudate process

	Ibrahim, 2017	Arora et al., 2016	Sagoo et al., 2018	Joshi and Sushama, 2017	Our study
Prominent papillary process	42%	13,88%	34%	5%	38,46%
Presence of the caudate process	100%	100%	60%	52%	71%

Sagoo et al., (2018) defines the furrow presence of Spiegel's lobe as a crack on the visceral surface of the liver that separates Spiegel's lobe from the caudate process. The presence of furrows in the Spiegel lobe is variable in the literature. Indeed, in the Cawich et al series (2020),

there are 8.3% of cases of caudate lobe furrow then in the Sarala et al. Study (2015), there are 30% cases of crack of the Spiegel lobe. These values are lower than our where we find a furrow on the lobe of Spiegel in 46% of cases.

CONCLUSION

Spiegel's lobe is present on all livers studied. It usually sits in the posterior part of the visceral face of the liver that it can sometimes overflow to reach the posterior edge. The rectangular and ovoid shapes predominate. The papillary process is inconsistent while the caudate process is

present in the majority of Spiegel lobes. The presence of furrow in the Spiegel lobe is quite common so the existence of Spiegel accessory lobe remains exceptional. These morphological variations are very useful in the diagnosis and surgery of Spiegel lobe tumors.

Conflict of interest: The authors declare that there is no conflict of interest regarding the publication of this article.

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