

**UNIVERSITATEA DE MEDICINĂ ȘI FARMACIE**

**„CAROL DAVILA”, BUCUREȘTI**

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**TOTAL AND PARTIAL SPLENECTOMY BY MINIMALLY INVASIVE  
APPROACH**

**PhD TUTOR:**

**PROF. UNIV. DR. CĂTĂLIN VASILESCU**

**PHd STUDENT:**

**TIVADAR MIHAELA-BEATRICE**

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## TOTAL AND PARTIAL SPLENECTOMY VIA MINIMALLY INVASIVE APPROACH

The theme of the present PhD topic is a broad and challenging one to study the pathology and surgical approach of the spleen from several points of view in order to finally highlight the optimal surgical approach of the spleen in various pathologies.

Partial and total splenectomy were analysed for multiple indications: hematologic pathology, tumour pathology and last but not least, infectious pathology, covering the whole spectrum of pathologies requiring splenectomy.

A first general observation evident both from the case studies studied in the General Surgery Clinic of the Fundeni Clinical Institute and from an exhaustive study of the literature on splenectomy was the overall decrease in the number of splenectomies. The most dramatic decrease as we have shown occurred for total splenectomy, and from this point of view the reason for this evolution is undoubtedly the objectification of the harmful effects of asplenism. total splenectomy has also decreased as an indication but a role in the decrease of total splenectomy is also played by SP which has in some cases replaced this intervention[1, 2].

The increased knowledge of this previously poorly understood organ, both from a pathophysiologic and histologic point of view but also of vascular anatomy and its anatomic variants, has made splenic parenchymal spleen-preserving surgery possible, an innovation in the surgical world that has enjoyed a significant momentum quite quickly. This enthusiasm for SP is evident from the plethora of studies on the subject conducted in the early 2000s, then a gradual decline in "interest" in partial splenectomy, correlated in our case with the dramatic decrease in the number of SP performed in the clinic[3-6].

While the decrease in the number of total splenectomies seemed understandable, the decrease in SP required further investigation. The reason for this downward trend in splenectomies is the evolution of treatments and interventional treatment methods.

The most obvious progress has been made for traumatic pathology of the spleen where increasingly non-operative management (percutaneous embolization) and hematologic diseases are chosen [7-9].

We have shown that the advent of rituximab has correlated with fewer and fewer total splenectomies, especially in immune thrombocytopenic purpura where the most drastic decrease in splenectomies is observed[10].

However, despite all these advances and this decreasing pattern, splenectomy has not lost its importance, indications for both total splenectomy and partial splenectomy being clear[11-15].

An important line of research has been the type of approach. In multiple cases in general surgery and beyond, minimally invasive methods have replaced the open approach and have become the 'gold standard', and equally in the series studied the preference for the minimally invasive approach, especially the laparoscopic approach, was emphasized[16, 17].

In order to answer all these questions, we chose on the one hand an analysis focused strictly on parameters related to the surgical intervention, namely the duration of surgery, intra-operative bleeding, postoperative hospitalization days.

In this way the SP were compared according to the type of approach open, laparoscopic or robotic, demonstrating the superiority of partial splenectomy by laparoscopic approach. Subsequently a comparison was performed following the same parameters between partial splenectomy and total splenectomy. Again, superior results were recorded for laparoscopic partial splenectomy[11, 18, 19].

Once the operative techniques were evaluated, the aim was to objectivize the efficiency of partial splenectomy and especially to compare the effects of partial splenectomy and total splenectomy in terms of haemoglobin, platelets number, total bilirubin levels, number of reticulocytes etc.

Thus the overall superiority of SP was demonstrated, especially for hematologic diseases, particularly microspherocytosis[20, 21].

Another line of research was infectious pathology of the spleen. For this, the role of partial splenectomy in the treatment of hydatid cyst was studied, and for total splenectomy, its role in patients with endocarditis.

Although partial splenectomy is a fairly widespread procedure performed in multiple centres, for the approach of splenic hydatid cyst it is rarely used.

Ten cases of splenic hydatid cyst without other localization of parasitic disease were extracted from the clinic case reports and the same parameters were analysed. A literature review on the

subject was also performed. This study emphasizes that partial splenectomy is a feasible technique to approach this pathology. The advantages are the preservation of splenic parenchyma, the possibility of a minimally invasive approach, the complete removal of the hydatid cyst and minimization of the risk of rupture and dissemination of intra-abdominal cystic content[22-25].

Regarding endocarditis, the curiosity has been more related to the optimal sequencing of splenectomy and valve prosthetic surgery. Analysing the literature on this topic, we firstly found a very limited number of articles on this topic, the paucity of case reports and the lack of a clear consensus on the approach to patients with infectious endocarditis and concomitant splenic abscess requiring heart valve replacement[26, 27].

A combination of data from the literature and analysis of these cases in the clinic suggests a preference for initial splenectomy followed by valve replacement, as this limits the risk of contamination of the valve prosthesis. However, analysing the cases in which the sequence of interventions was reversed, we observe that there are no significant differences between these two approaches, and it is possible that the fear of valve contamination is unjustified. This study also points to another line of research that could be explored in the future: the role of percutaneous drainage of splenic abscesses in these patients at increased surgical risk. The limitations of this study were the small caseload and the preponderance of cases in which splenectomy was the first intervention, which made it difficult to draw a definitive conclusion. Likewise, only one case in the study group was performed laparoscopically, so no conclusions can be drawn on the type of approach[28].

Last but not least the role of splenectomy in splenic tumour pathology was studied. Since the role of partial splenectomy in splenic cyst pathology has been extensively studied previously, we turned our attention to a special topic: single splenic metastases of colo-rectal cancers origin.

Although very few patients with splenic metastases as the sole localization were operated on at Fundeni Clinical Institute between 2002 and 2024, the primary tumours were different: breast cancer, lung cancer, ovarian neoplasm, etc. Considering the high incidence of colorectal neoplasm, the question arose: what would be the optimal management of patients with colo-rectal cancers and splenic metastases as the sole localization. Despite this lack of case reports, a study was performed on the data of patients with single splenic metastases after colo-rectal cancers for whom splenectomy was performed. Data were extracted from PubMed, Google

Scholar and Elsevier Scopus databases. The main aim was to assess the survival of these patients and to identify potential predictors related to survival[29].

Many of the variables assessed were not factors that correlated statistically with survival but what did emerge was a promising survival rate in these patients and an interesting observation, better survivals in patients over 62 years of age counterintuitive was the lack of correlation of survival with perioperative chemotherapy performance and time period, it is expected that chemotherapy performance would have a positive effect on survival, especially in the last 20 years with the introduction of new chemotherapeutic agents in adjuvant therapy, especially oxaliplatin.

Again, through the prism of too few cases, the role of SP in the management of splenic metastases could not be assessed although it is cited in the literature. This may be a direction for future research.

In conclusion, although the role of splenectomy in various pathologies has gradually diminished, when a minimally invasive approach and especially when partial splenectomy is possible, they provide optimal therapeutic and surgical results.

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