

## TREND OF ROBOTIC SURGERY IN GYNECOLOGY IN BULGARIA - CAUSES

Darina Mineva

National Health Insurance Fund, Sofia, Bulgaria, dariamineva@abv.bg

**Abstract:** This article presents a trend of robot-assisted gynecological surgery in four hospitals of different status, linking it to management and strategic goals. **Methodology:** The statistical data from the volume of activity of four hospitals in Bulgaria for the two periods are compared: the first three and the second three months of 2021 (in the text, marked as the first and second period of 2021). The short period of the study provides information on the emerging trend in the health market for this type of medical activity. **Results:** The activity of the examined hospitals in the second quarter increased almost twice: for a university hospital by 40%, for a general hospital by 50%, for a specialized hospital by 57% and for a second university hospital by 54%. Hospitals form a niche market in the health market - "robotic surgery in gynecology", within which each occupies a certain trend of performance. Trends are stable against each other. The factors on which the different performance of hospitals in the niche market depend are: geographical, demographic, types of resources and management. **Discussion:** The choice of two adjacent short periods for the study of surgical activity in gynecology by robot, makes it possible to assess the trend of increasing the volume and cost of individual hospitals for this activity and take corrective action by contractors for contracted activities with public funding institutions. Given the same available material, equipment and human resources, similar geographical and demographic characteristics, in terms of regulatory freedom of access to the hospital, the distribution of financial resources by the funding authority depends on the strategic plans of the contractors. **Conclusion:** there is a tendency in the presentation of hospitals performing robotic surgery in gynecology in Bulgaria to occupy a stable market niche in the health sector, and contractors are established as centers of innovation in medicine, the deciding factor for which is the management of the hospital.

**Keywords:** robot-assisted surgery, hospital, hospital management

### 1. INTRODUCTION

Robotic surgery entered medical practice in the 1990s. The robotic platforms were originally funded and developed through the United States Department of Defense for telemedicine in military operations. In Bulgaria, robot-assisted surgery has taken a market niche in the healthcare sector in the last year. This article presents a trend of robot-assisted gynecological surgery in four hospitals of different status, linking it to management and strategic goals

**AIM:** To determine the trend in the development of robotic surgery in obstetrics and gynecology in two adjacent periods.

### 2. METHODOLOGY

The statistical data from the volume of activity of four hospitals in Bulgaria for the two periods are compared: the first three and the second three months of 2021 (in the text, marked as the first and second period of 2021). The short period of the study provides information on the emerging trend in the health market for this type of medical activity. The hospitals are marked as A, B, C and C. Two of them have the status of university hospitals, one is a multidisciplinary hospital and one is a specialized hospital for obstetrics and gynecology.

### 3. RESULTS

During the first period of 2021, a total of 106 surgical interventions in gynecology were performed through robot-assisted surgery. In the second period of 2021, a total of 199 gynecological surgeries were performed through robot-assisted surgery, an increase of 45%.

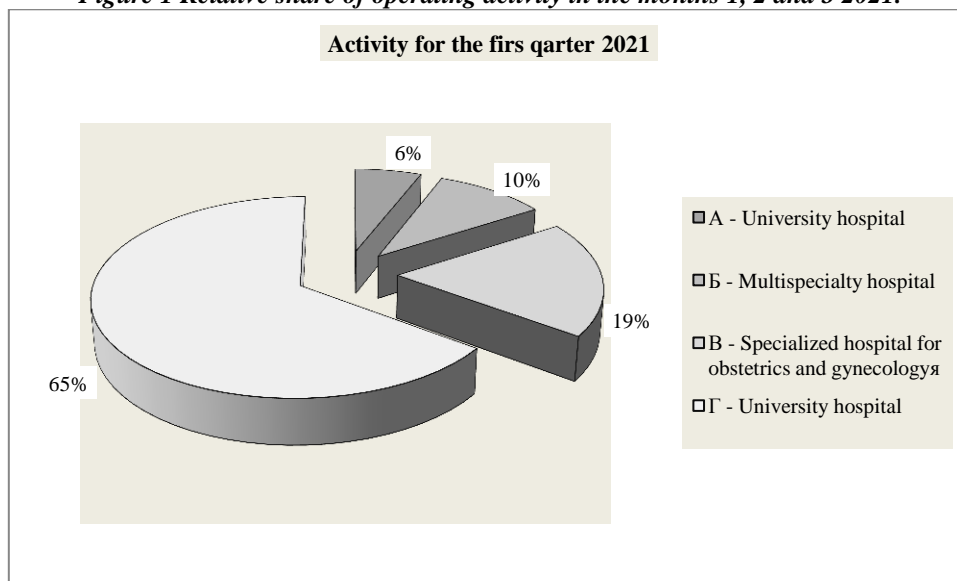
*Table 1 Volume of activity for the first six months of 2021*

№	Hospital	Number of cases 1, 2, 3, month 2021	%	Number of cases 4, 5, 6 months 2021	%
1.	A - University Hospital	6	6	15	8
2.	Б - Multispecialty hospital	11	10	22	11
3.	В Specialized hospital for obstetrics and gynecology	20	19	35	18
4.	Г University Hospital	69	65	127	64
<b>Total</b>		<b>106</b>		<b>199</b>	

The relative share of the operative activity of each hospital was determined, compared to the total volume of activity through robotic surgery for the first three months of 2021 (Figure 1) and the second three months of 2021 (Figure 2), shows similar data.

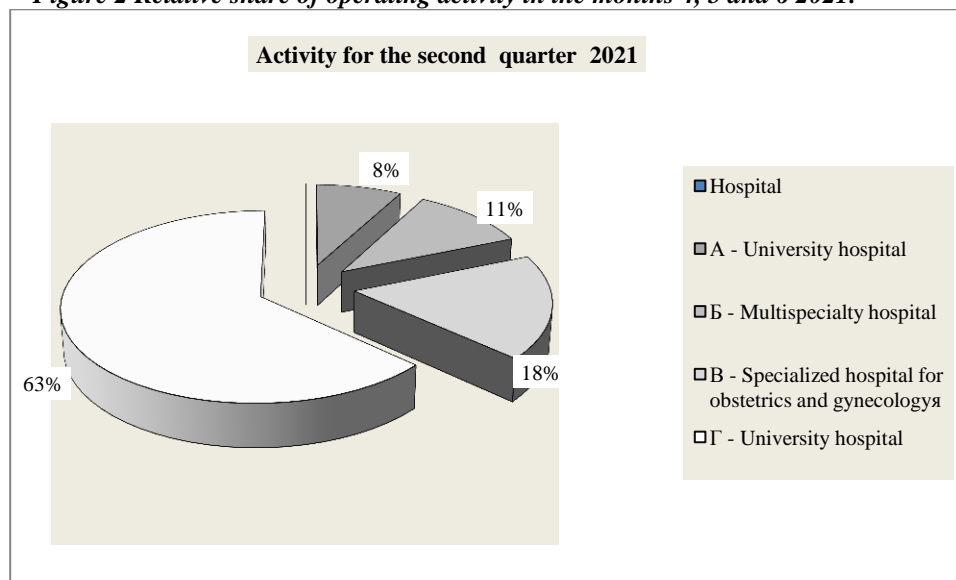
During the first three months of 2021, the largest share in the operational activity in obstetrics and gynecology through a robot fell to one university hospital specialized hospital in obstetrics and gynecology, respectively D and C. The second university hospital (Figure 1).

**Figure 1 Relative share of operating activity in the months 1, 2 and 3 2021.**



In the second three months of 2021, the largest share in the operational activity in obstetrics and gynecology through robots is carried out by one university hospital specialized hospital in obstetrics and gynecology, respectively D and C (Figure 2).

**Figure 2 Relative share of operating activity in the months 4, 5 and 6 2021.**



In both review periods, another University Hospital A remained with the smallest share of robot operations, relative to the total operating volume. In the second three months, the four hospitals showed a tendency to increase the volume of surgical activity (Figure 3)

**Figure 3 Trend of operational activity by robot**

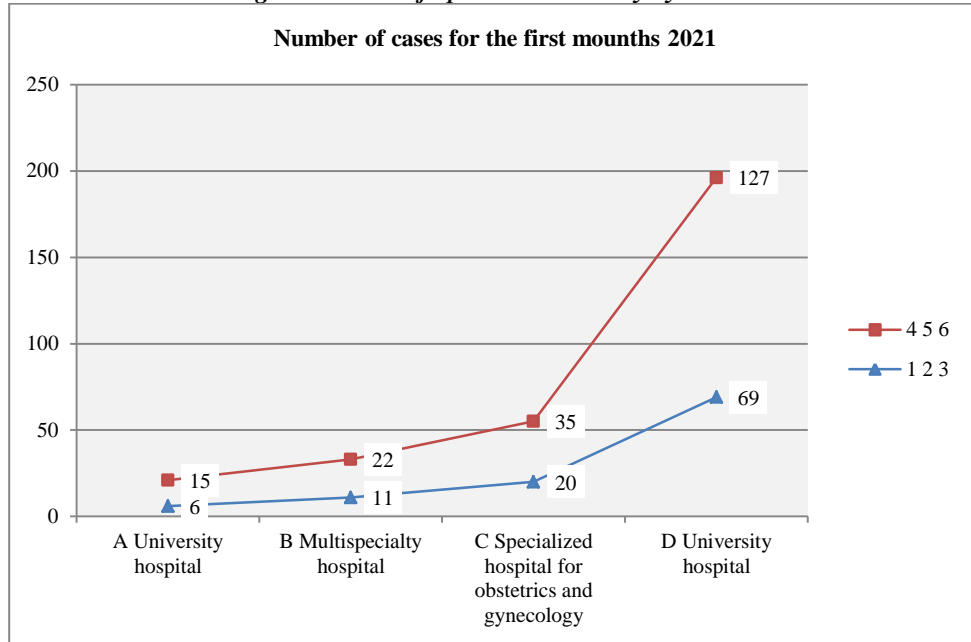


Figure 3 shows that the activity of the hospitals in question in the second quarter increased almost twice: for university hospital A by 40%, for general hospital B by 50%, for specialized hospital B by 57% and university hospital D by 54%.

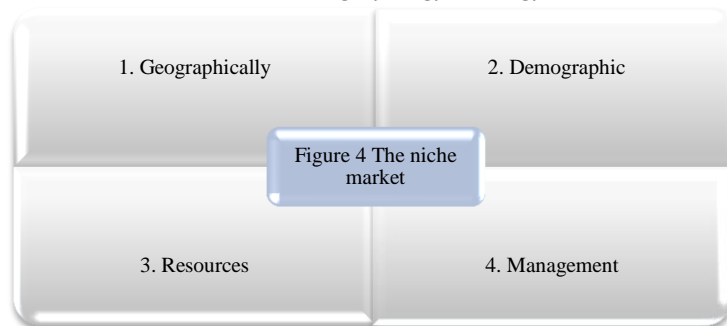
#### 4. DISCUSSION

During the second period under consideration, in all hospitals there is a tendency to increase the surgical activity by 40 - 50%, compared to the first. The ratio of the volume of activity between the hospitals is preserved. They have a different status. The two university hospitals have the same, but are differently represented in the health market.

The four hospitals form a niche market in the health market - "robotic surgery in obstetrics and gynecology", within which each occupies a certain trend of performance. Figure 3 shows that these trends are stable against each other. The factors on which the different performance of hospitals in the market niche depends are: geographical, demographic, types of resources and management.

The demographic characteristics of the region and the geographical location of the given hospital for health care are differently expressed. In hospital A their scope is national, in hospital B - covers a region of the capital, in hospital C - despite the national importance - the emphasis is on obstetrics and hospital D - covers a region in the province. Normally, patients' access to these hospitals is exempt. All of them have a contract with the National Health Fund, where a given activity requires resources - equipment and medical specialists. Fulfillment of the condition is present. The factors that influence the nature of the niche market for "robotic surgery in obstetrics and gynecology" of the healthcare segment are presented in Figure 4.

**Figure 4 The niche market "Robotic surgery in gynecology" in the healthcare segment - factors**



The first three characteristics of these factors for the studied hospitals are similar. We do not have management data. Indirectly, the emerging trend for volume as a share of activity and a stable presence, gives reason to believe that the management factor is decisive for this trend.

The difference in the volume of activity of the studied hospitals is due to the different strategic planning, the vision and marketing concept for the activity of the given hospital, for what place the robotic surgery occupies, compared to the other medical activities of the organization.

The reason for the freedom of the different vision of the hospital management to accept innovations, in this case robotic surgery, is due to their status as independent legal entities.

## 5. CONCLUSIONS

The choice of two adjacent short periods for the study of surgical activity in hypertension through a robot makes it possible to assess:

- the trend of increasing the volume and costs for individual hospitals for this activity.
- undertaking corrective actions by the counterparties for agreed activities with public financing institutions.

Given the same available material (equipment) and human resources, similar geographical and demographic characteristics, in terms of regulatory freedom of access to the hospital, the distribution of financial resources by the funding authority depends on the strategic plans of the contractors.

**The trend in the performance of robotic surgery hospitals in obstetrics and gynecology in Bulgaria is that their activities occupy a stable market niche in the health sector, and contractors are established as centers of innovation in medicine, the deciding factor for which is the management of the hospital.**

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