Robotic surgery in Hungary (2022–2025): expansion, case-mix dynamics, and provider concentration

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OBJECTIVES

Robotic surgeries have ever increased market share in many advanced healthcare systems. In Hungary the robotic-assisted surgeries are covered in a centralized way, by half dozens of hospitals. The aim of the study is to describe the inpatient robotic surgery activity in Hungary and quantify inter-hospital concentration and case-mix changes between 2022 and 2025.

METHODS

The study database was derived from The National Directorate General for Hospitals. The robotic-surgery-related DRG activity for 2022–2025 (October) was evaluated. Outcomes were annual unique patients, cases, and DRG cost-weights; hospital market shares, medical specialties and ICD-10 distributions. We computed concentration (Herfindahl–Hirschman Index [HHI], 3-firm concentration ratio [CR3], Gini) and tested temporal changes in specialty mix (chi-square) and mean cost-weight per case across years (ANOVA).

RESULTS

Cases increased from 591 (557 patients; 5,590 DRG cost-weights) in 2022 to 2,663 (2,458 patients; 23,200 DRG cost-weights) in 2025; representing 4.51-fold more cases and 4.15-fold more cost-weights versus 2022. Activity was concentrated in six centers; the National Institute of Oncology accounted for 35.99% of cases and the top three providers for 77.63% (HHI=0.241; Gini=0.374). General surgery (27.49%), urology (23.74%), and gynecology (21.46%) comprised 72.68% of activity. The specialty distribution shifted over time (chi-square: $p<0.001$). Mean cost-weight per case declined from 9.44 in 2022 to 8.68 in 2025 ($p=0.0066$).

CONCLUSIONS

Robotic surgery inpatient activity expanded rapidly with moderate-to-high provider concentration and a small but statistically significant shift in specialty mix. To the declining cost-weight per case reflects changing case complexity and the refinement of financing techinique, because since 2022 there was only 1 piece of robotic-surgery related DRG, with the increased involvement of fellow OR-related specialities from May 2025, 9 pieces of specified DRGs were applied more tailored for the mix and need of cost.

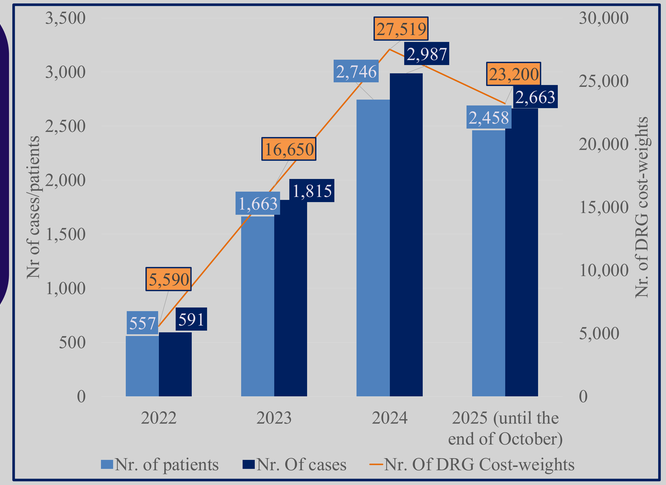

Figure 1.
Annual number of cases, patients and DRG cost-weights in the Hungarian public-funded healthcare

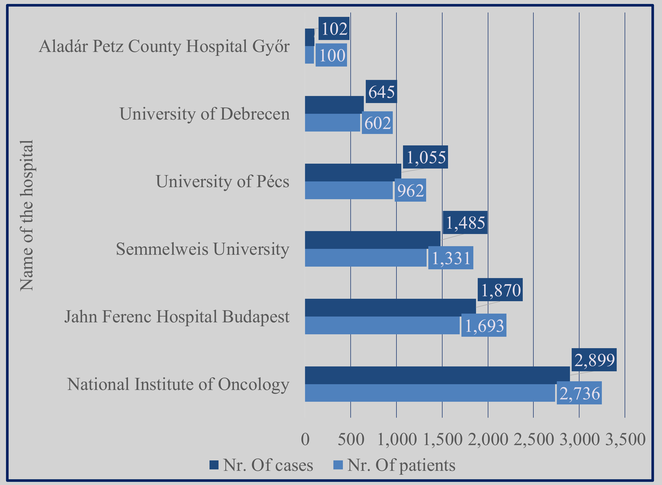

Figure 2.
Annual number of cases and patients in hospital breakdown between 2022-2025

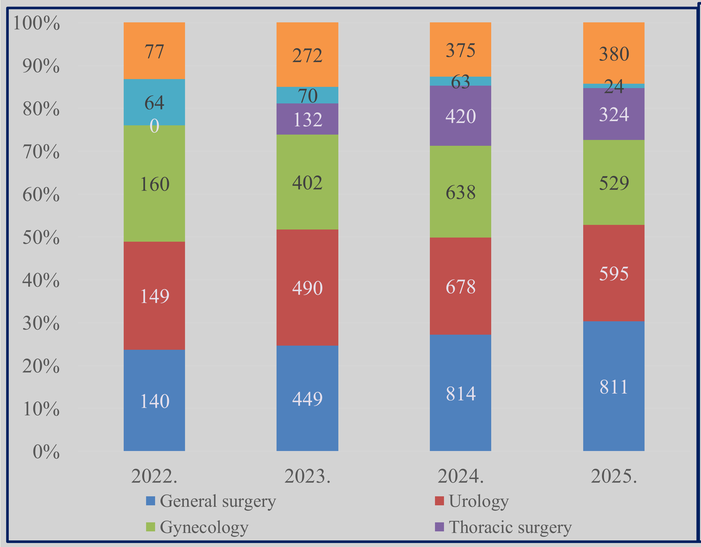

Figure 3.
Annual distribution of robotic-assisted surgical cases according to medical fields

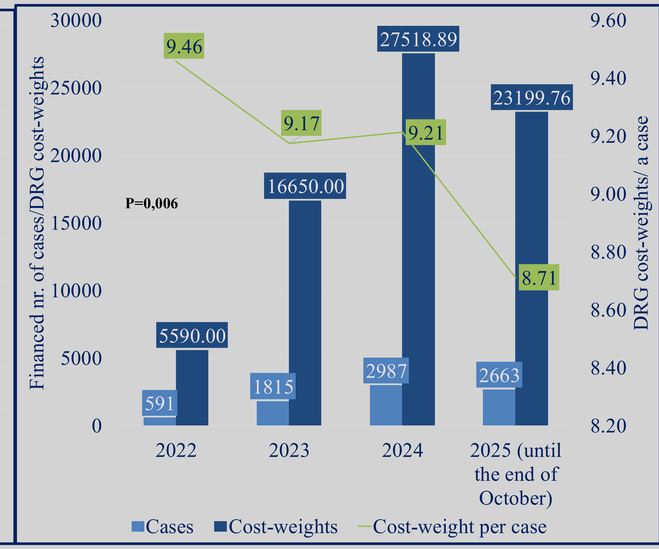

Figure 4.
Changing of DRG cost-weights/a case

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