

# Calcium-phosphate metabolism disorders after pancreatic surgery

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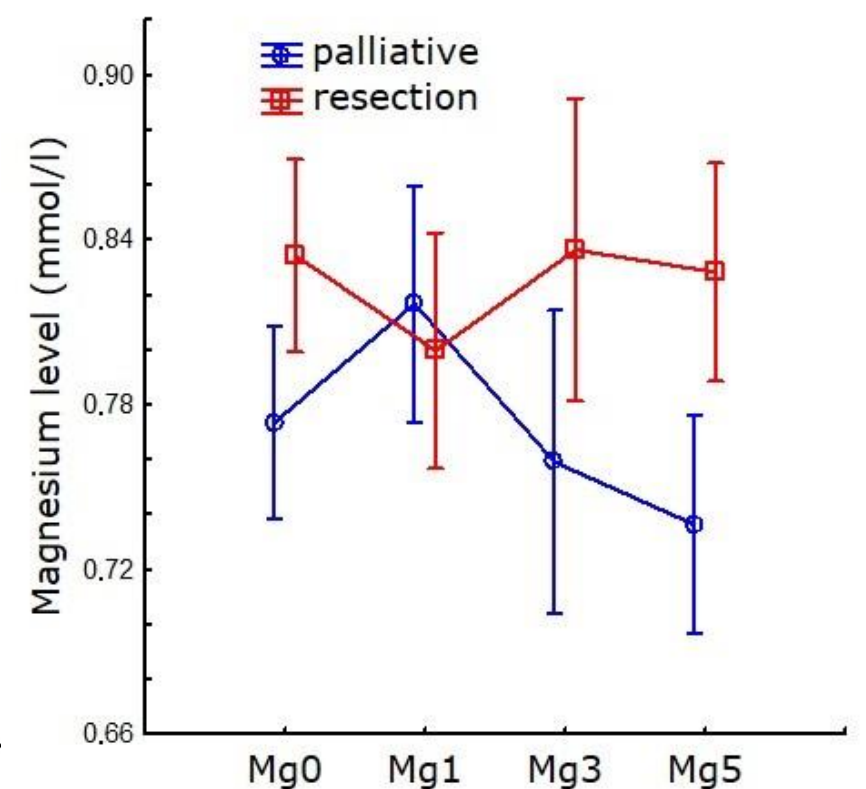
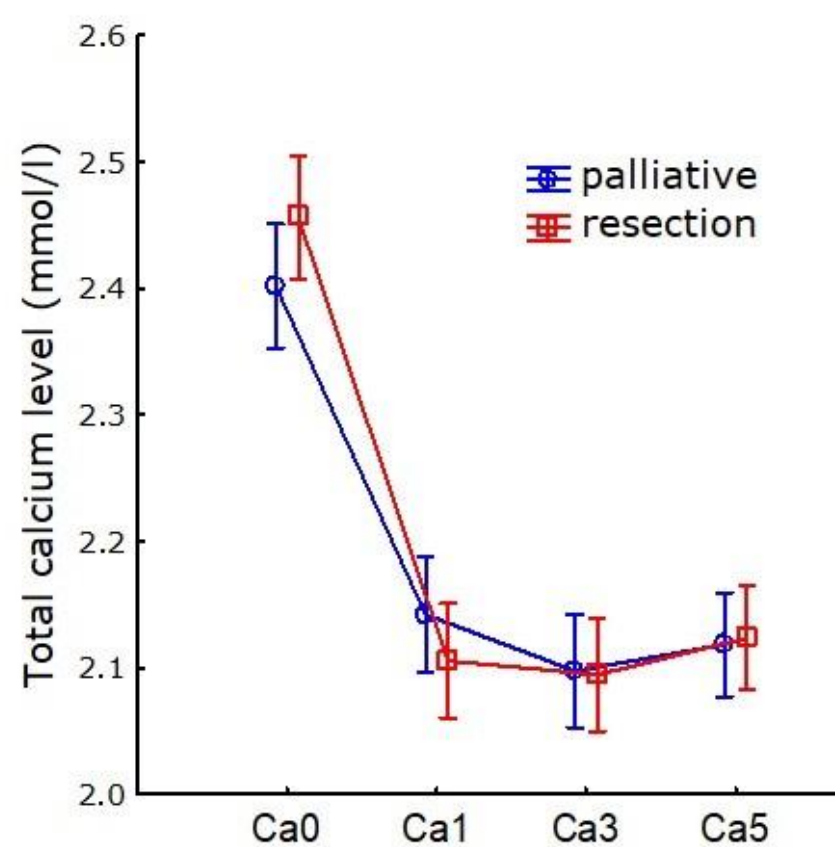
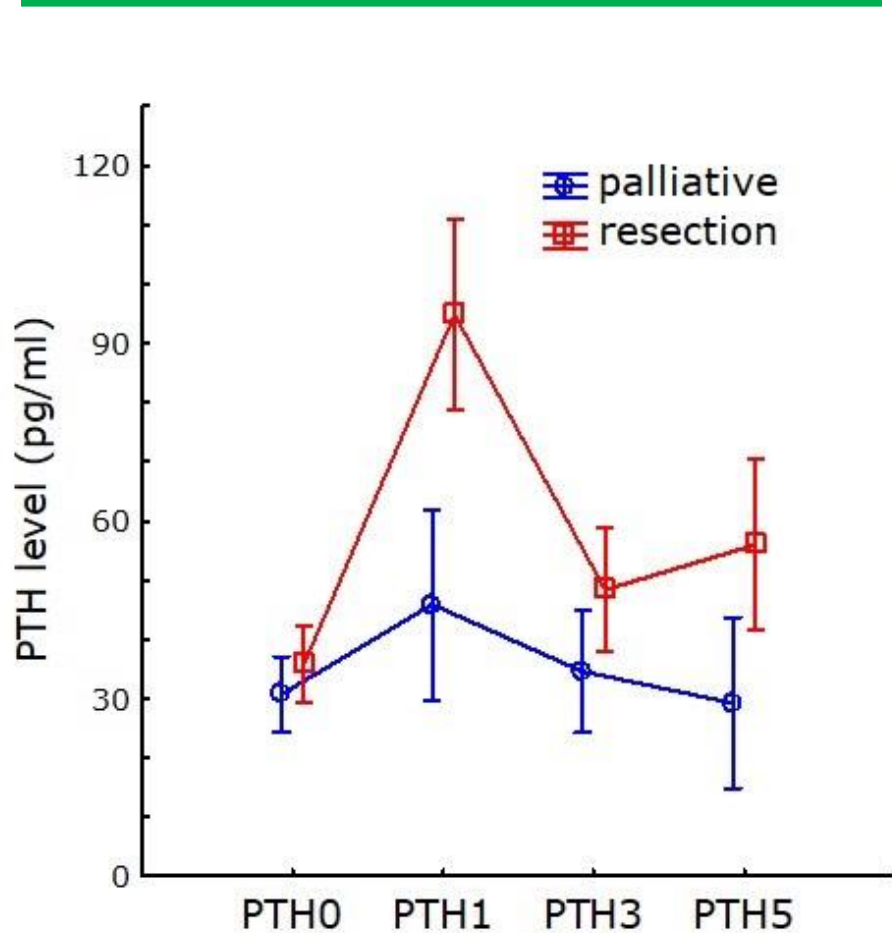
**Introduction:** Electrolyte disturbances are common in patients undergoing major abdominal surgery. The impact of pancreatic surgery on the occurrence of calcium-phosphate metabolism disorders is unknown.

**The aim of the study was to compare the parameters of calcium-phosphate metabolism in the perioperative period in patients undergoing pancreatic resection and palliative surgery.**

## Conclusion:

1. We demonstrated significant disturbances in calcium-phosphate metabolism after pancreatic resections.
2. In the resection group increased parathormone level was probably related to the tissue damage during surgery and the hypocalcaemia in the postoperative period.
3. Magnesium levels were higher in the resection group. The higher concentration of parathormone increased the reabsorption of magnesium in the kidneys.

**Materials and methods:** 42 patients (23 women) with pancreatic cancer operated on in 2022 at the Department of General and Transplant Surgery, Medical University of Lodz were included in the study. Pancreatic resection was performed in 21 patients (50%) – Whipple's pancreatoduodenectomy in 13 patients and distal pancreatectomy in 8 patients. Palliative surgery was performed in 21 patients. Before the surgery and on the 1<sup>st</sup> (1POD), 3<sup>rd</sup> (3POD) and 5<sup>th</sup> (5POD) postoperative day, the levels of: parathyroid hormone (PTH), total calcium (Ca), phosphates (P), magnesium (Mg), albumin, creatinine, CRP and leukocytosis were assessed in the blood.



**Results:** PTH level in the resection group on the 1POD and 5POD was statistically significantly higher than in the palliative group:  $94.83 \pm 45.75$  vs.  $45.90 \pm 23.91$  pg/ml,  $p=0.000367$ ;  $55.96 \pm 43.95$  vs.  $29.25 \pm 14.65$  pg/ml,  $p=0.004$ , respectively.

A positive correlation between the PTH level and CRP level on the 1POD in the group of all patients ( $R=0.33$ ,  $p=0.032$ ) and in the resection group ( $R=0.51$ ,  $p=0.019$ ) was found. In 4 (19.05%) patients in the resection group, pancreatic fistula was diagnosed in the postoperative period. No statistically significant differences were found in the examined parameters between the group of patients with pancreatic fistula and without pancreatic fistula.

Ca level was statistically significantly lower on the 1POD in the resection group than in the palliative group:  $2.11 \pm 0.11$  vs.  $2.14 \pm 0.10$  mmol/l,  $p=0.044$ .

Mg levels were statistically significantly higher in the resection group before the procedure, on the 3POD and 5POD than in the palliative group:  $0.83 \pm 0.07$  vs.  $0.77 \pm 0.09$  mmol/l,  $p=0.007$ ;  $0.84 \pm 0.15$  vs.  $0.76 \pm 0.10$  mmol/l,  $p=0.014$ ;  $0.83 \pm 0.10$  vs.  $0.74 \pm 0.08$  mmol/l,  $p=0.009$ , respectively.

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