



# Rhabdomyolysis as a rare but fatal complication of bariatric surgery: A case report

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## ABSTRACT

Rhabdomyolysis after bariatric surgery is a quite rare occurrence with low recognition. Due to the breakdown of the striated muscle fibers, creatine kinase and myoglobin are released into the systemic circulation with variable effects on the renal filtration functions. Herein we present the case of a patient who developed rhabdomyolysis following revision bariatric surgery. A 34-year-old male patient was admitted for bariatric surgery. He had undergone a gastric band surgery approximately 6 years ago, with weight regain starting 1 year postoperatively gradually reaching the previous weight level. Consequently, the gastric band was removed with open surgery 3 years ago. The patient had a body mass index of 69 kg/m<sup>2</sup> and an incisional hernia due to the previous surgery. Although initially, laparoscopic sleeve gastrectomy was planned, a switch to open surgery was made due to the presence of diffuse intra-abdominal adhesions and a giant incisional hernia precluding a laparoscopic intervention. The total duration of surgery was 420 min. Postoperative laboratory work-up showed elevated blood creatine kinase levels (25837 U/L). Upon the failure of fluid replacement and diuretics, hemodialysis was initiated on postoperative day 1. Despite daily sessions of hemodialysis, the patient's acidosis did not improve; his general status worsened, and he died on postoperative day 14. Rhabdomyolysis is a severe and potentially life-threatening complication of bariatric surgery. Its severity may vary from asymptomatic elevation in creatine kinase levels to death. Postoperative creatine kinase levels should be routinely monitored in high-risk patients as a practical and inexpensive laboratory modality for early diagnosis.

**Keywords:** Complication, rhabdomyolysis, sleeve gastrectomy

## INTRODUCTION

In contrast with other well-known complications of bariatric surgery, rhabdomyolysis (RML) is a rare and under-recognized complication (1). The breakdown of the striated muscle fibers leads to the release of creatine kinase and myoglobin into the systemic circulation with a consequent impact on renal filtration functions. Depending on the severity of the insult, the severity of RML may vary from asymptomatic cases to those with life-threatening hypovolemia, electrolyte disturbances, coagulopathy, and renal failure (2). Because acute renal failure associated with the breakdown of muscle fibers shows a mortality rate of approximately 20% (3), early diagnosis is of utmost clinical importance. Here we present the case of a patient who developed RML after bariatric revision surgery.

## CASE PRESENTATION

A 34-year-old male patient was admitted for bariatric surgery. He had undergone a gastric band surgery approximately 6 years ago, with weight regain starting 1 year postoperatively gradually reaching the previous weight level. Subsequently, the gastric band was removed with open surgery 3 years ago. The patient had a body mass index of 69 kg/m<sup>2</sup> and an incisional hernia due to previous surgery. Although initially, laparoscopic sleeve gastrectomy was planned, a switch to open surgery was made due to the presence of diffuse intra-abdominal adhesions and a giant incisional hernia precluding an laparoscopic intervention. The total duration of surgery was 420 min. Postoperative laboratory work-up showed elevated blood creatine kinase levels (25837 U/L). Upon the failure of fluid replacement and diuretics, hemodialysis was initiated on postoperative day 1. Despite daily sessions of hemodialysis, the patient's acidosis did not improve; his general status worsened, and he died on postoperative day 14. Preoperative patient approval form was taken.

## DISCUSSION

The first description of RML dates back to the bombing of London during the World War II (4). RML may occur after a traumatic injury or following elective surgical interventions with a variable incidence. For example, while it occurs in 0%–5% patients after laparoscopic renal surgery (5), a higher occurrence has been reported following bariatric surgery (6). Risk factors for RML include prolonged surgery, male gender, obesity, and patient position (7). Similarly, duration of surgery longer than 4 h or a BMI of >50 kg/m<sup>2</sup> are associated with increased RML risk, just as the case for lithotomy and lateral decubitus positions. Our patient was a 34-year-old male with a history of two previous surgical interventions and a BMI of 69 kg/m<sup>2</sup>. The total duration of surgery was 420 min. All of these factors placed him in the high-risk category for RML.

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Creatine kinase levels greater than five times the upper limit of normal or >1000 IU/L are suggestive of RML. When creatine kinase levels exceed 5000 IU/L without any myocardial or cranial infarction, severe muscle injury is highly likely (8). From a clinical point of view, patients may experience severe pain in the gluteal region, lower back, or shoulders, which are usually in direct contact with the surgical table during the surgery. As soon as the diagnosis is made, adequate fluid replacement should be initiated at a rate of 200–300 mL/h for a total daily dose of 10–12 L (9). Additional fluid replacement intraoperatively has no effect in the prevention of the development of RML and on the course of acute renal failure. However, early initiation of fluid replacement within 6 h and subsequent diuresis may assist in maintaining renal function and preventing mortality (10).

### CONCLUSION

Rhabdomyolysis represents a potentially life-threatening complication of bariatric surgery. It may exhibit a variable severity from an asymptomatic clinical course to death. Creatine kinase level measurement represents an inexpensive and practical biochemical test that should be routinely performed postoperatively in high-risk patients.

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**Informed Consent:** Written informed consent was obtained from patient who participated in this study.

**Peer-review:** Externally peer-reviewed.

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### REFERENCES

1. Collier B, Goreja MA, Duke BE 3rd. Postoperative rhabdomyolysis with bariatric surgery. *Obes Surg* 2003; 13: 941-943. [\[CrossRef\]](#)
2. Singh D, Chander V, Chopra K. Rhabdomyolysis. *Methods Find Exp Clin Pharmacol* 2005; 27: 39-48. [\[CrossRef\]](#)
3. Holt SG, Moore KP. Pathogenesis and treatment of renal dysfunction in rhabdomyolysis. *Intensive Care Med* 2001; 27: 803-811. [\[CrossRef\]](#)
4. Bywaters EGL, Beall D. Crush injuries with impairment of renal function. *BMJ* 1941; 1: 427. [\[CrossRef\]](#)
5. Glassman DT, Merriam WG, Trabulsi EJ, Byrne D, Gomella L. Rhabdomyolysis after laparoscopic nephrectomy. *JLS* 2007; 11: 432-437.
6. de Freitas Carvalho DA, Valezi AC, de Brito EM, de Souza JC, Masson AC, Matsuo T. Rhabdomyolysis after bariatric surgery. *Obes Surg* 2006; 16: 740-744. [\[CrossRef\]](#)
7. Biswas S, Gnanasekaran I, Ivatury RR, Simon R, Patel AN. Exaggerated lithotomy position-related rhabdomyolysis. *Am Surg* 1997; 63: 361-364.
8. Ward MM. Factors predictive of acute renal failure in rhabdomyolysis. *Arch Intern Med* 1988; 148: 1553-1557. [\[CrossRef\]](#)
9. Better OS, Abassi ZA. Early fluid resuscitation in patients with rhabdomyolysis. *Nat Rev Nephrol* 2011; 7: 416-422. [\[CrossRef\]](#)
10. Ron D, Taitelman U, Michaelson M, Bar-Joseph G, Bursztein S, Better OS. Prevention of acute renal failure in traumatic rhabdomyolysis. *Arch Intern Med* 1984; 144: 277-280. [\[CrossRef\]](#)