





# Rhabdomyolysis as a rare complication of bariatric surgery

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## ABSTRACT

Rhabdomyolysis after bariatric surgery is a quite rare occurrence with low recognition. Due to the breakdown of striated muscle fibers, creatine kinase and myoglobin are released into systemic circulation with variable effects on renal filtering functions. Herein, it was aimed to present a patient who developed rhabdomyolysis following revision bariatric surgery. This 34-year-old male patient was admitted for bariatric surgery. He had had a gastric band surgery approximately six years ago, with regain of weight starting one year after surgery gradually reaching the previous weight level. Consequently, the gastric band had been removed with open surgery three years ago. The patient had a body mass index of 69 kg/m<sup>2</sup> as well as 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 giant incisional hernia precluding laparoscopic intervention. The total duration of surgery was 420 minutes. Postoperative laboratory work-up showed elevated blood creatine kinase (25837 U/L). Upon the failure of fluid replacement and diuretics, hemodialysis was initiated at postoperative day 1. Despite daily sessions of hemodialysis, acidosis did not improve, his general status worsened and the patient died on postoperative day 14. Rhabdomyolysis is a severe and potentially life-threatening complication of bariatric surgery. Its severity may vary from asymptomatic elevations of creatine kinase to death. Postoperative creatine kinase levels should be routinely checked in high-risk patients as a practical and inexpensive laboratory modality for early diagnosis.

**Keywords:** Sleeve gastrectomy, rhabdomyolysis, complication

## INTRODUCTION

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

## CASE REPORT

This 34-year-old male patient was admitted for bariatric surgery. He had had a gastric band surgery approximately six years ago, with regain of weight starting one year after surgery gradually reaching the previous weight level. Subsequently, the gastric band had been removed with open surgery three years ago. The patient had a body mass index of 69 kg/m<sup>2</sup> as well as 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 giant incisional hernia precluding laparoscopic intervention. The total duration of surgery was 420 minutes. Postoperative laboratory work-up showed elevated blood creatine kinase (25837 U/L). Upon the failure of fluid replacement and diuretics, hemodialysis was initiated on postoperative day 1. Despite daily sessions of hemodialysis, acidosis did not improve, his general status worsened, and the patient died on postoperative day 14.

**Cite this article as:** Usta S, Karabulut K. Rhabdomyolysis as a rare complication of bariatric surgery. Turk J Surg 2021; 37 (4): 400-402.

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Received: 06.10.2017

Accepted: 01.12.2017

Available Online Date: 31.12.2021

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DOI: 10.47717/turkjsurg.2021.3990

## DISCUSSION

The first description of rhabdomyolysis (RML) dates back to the bombing of London during the World War II (4). RML may occur after traumatic injury or elective surgical interventions with a variable incidence. For example, while it occurs in %0 to %5 of patients after laparoscopic renal surgery (5), a higher occurrence has been reported following bariatric surgery (6). Risk factors for RML include prolonged surgery, male sex, obesity, and patient position (7). Similarly, duration of surgery longer than four hours 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>. Total duration of surgery was 420 minutes. All of these factors placed him in the high-risk category for RML.

A creatine kinase level of greater than 5 times the upper limit of normal or >1000 IU/L is suggestive of RML diagnosis. When creatine kinase levels exceed 5000 IU/L without 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 area, low back, or shoulders, which are usually in direct contact with the surgical table during the operation. Adequate fluid replacement should be initiated as soon as the diagnosis is made at a rate of 200 to 300 ml per hour and for a total daily dose of 10 to 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 six hours and subsequent diuresis may assist in maintaining renal functions and preventing mortality (10).

## CONCLUSION

Rhabdomyolysis represents a potentially life-threatening complication of bariatric surgery. It may exhibit a variable severity from asymptomatic clinical course to death. Creatine kinase

measurement represents an inexpensive and practical biochemical test that should be routinely checked postoperatively in high-risk patients.

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

**Author Contributions:** Concept - S.U.; Design - S.U.; Supervision - K.K.; Materials - S.U., Data Collection and/or Processing - S.U., K.K.; Literature Search - S.U.; Writing Manuscript - S.U., K.K.; Critical Reviews - S.U., K.K.

**Conflict of Interest:** The authors have no conflicts of interest to declare.

**Financial Disclosure:** The authors declared that this study has received no financial support.

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**OLGU SUNUMU-ÖZET**

Turk J Surg 2021; 37 (4): 400-402

**Bariyatrik cerrahinin nadir bir komplikasyonu rabdomiyoliz**

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**ÖZET**

Rabdomiyoliz, bariyatrik cerrahi sonrası oldukça az görülen ve atlanan bir durumdur. Çizgili kas liflerinin yıkımı nedeniyle, dolaşıma, böbreğin süzme fonksiyonlarına çeşitli etkileri olan kreatin kinaz ve miyogloblin salınır. Burada, revizyonel bariyatrik cerrahi sonrası rabdomiyoliz gelişen bir hastayı sunmaktayız. Otuz dört yaşında erkek hasta bariyatrik cerrahi için başvurdu. Altı yıl önce mide bandı takıldığı ve ameliyattan bir yıl sonra kilo almaya başlayarak zamanla eski kilosuna ulaştığı öğrenildi. İlk ameliyattan üç yıl sonra mide bandının çıkartıldığı öğrenildi. Vücut kütle endeksi 69 kg/m<sup>2</sup> idi ve geçirilmiş cerrahiye bağlı insizyonel hernisi vardı. Başlangıçta laparoskopik cerrahi planlanmakla birlikte, yaygın karın içi yapışıklıklar ve dev laparoskopik girişimi engelleyen dev insizyonel herni nedeniyle açığa geçildi. Toplam ameliyat süresi 420 dakikaydı. Ameliyat sonrası bakılan değerlerden kreatin kinaz düzeyi yüksekti (25837 U/L). Sıvı replasmanı ve diüretiklere cevap alınmaması üzerine ameliyat sonrası 1. gün hemodiyalize başlandı. Günlük hemodiyaliz uygulamalarına rağmen asidozu düzelmedi ve genel durumu daha da kötüleşen hasta ameliyat sonrası 14. gün kaybedildi. Rabdomiyoliz, bariyatrik cerrahinin ciddi ve potansiyel olarak yaşamı tehdit eden bir komplikasyonudur. Ciddiyeti, asemptomatik kreatin kinaz yükselmelerinden ölüme kadar değişebilir. Erken tanı için, pratik ve pahalı olmayan bir test olan kan kreatin kinaz düzeylerine rutin olarak bakılmalıdır.

**Anahtar Kelimeler:** Sleeve gastrektomi, rabdomiyoliz, komplikasyon**DOI:** 10.47717/turkjsurg.2021.3990