



Rare *Prevotella bivia* infection after liposuction and fat graft: two case reports

Jooyeop Lee, In Sik Yun,
Tai Suk Roh, Young Seok Kim,
Kyunghyun Min

Department of Plastic and Reconstructive
Surgery, Gangnam Severance Hospital,
Yonsei University College of Medicine,
Seoul, Korea

Liposuction and fat grafting are commonly employed to improve body contouring. While postoperative infections are infrequent, severe complications like necrotizing fasciitis can arise, potentially destroying the aesthetic results. *Prevotella bivia* is an anaerobic, Gram-negative rod bacterium commonly found in the vaginal mucosa, with increased prevalence in cases of bacterial vaginosis. Infections caused by this species can lead to necrotizing fasciitis or extensive tissue necrosis, necessitating prompt diagnosis during the acute phase. This report presents two severe cases of infection caused by *P. bivia* following fat harvesting and grafting procedures. These cases required multiple debridements, skin grafts, and fasciotomies for management.

Keywords Case reports / *Prevotella bivia* / Lipectomy / Surgical wound infection / Body contouring

INTRODUCTION

Liposuction and fat grafting are commonly used techniques for achieving an ideal body shape. According to the 2022 annual statistics from the American Society of Plastic Surgeons, there were 325,669 liposuction procedures, 28,638 buttock fat grafting procedures, and 33,877 facial fat grafting procedures performed in the United States. Although the incidence of infections following these procedures is reported to be less than 1% [1,2], severe infections can result in full-thickness skin necrosis, underscoring the importance of meticulous postoperative management [3].

Common pathogens causing infections include *Staphylococcus aureus*, group A *Streptococcus*, and *Streptococcus pyogenes*. However, the severity of an infection can be significantly exacerbated by polymicrobial infections that involve anaerobes. Using antibiotics

that fail to appropriately target the causative pathogens can delay treatment progress and result in more severe sequelae [4,5].

Prevotella bivia is an anaerobic, Gram-negative rod that predominantly inhabits the vaginal mucosa and is more commonly found in cases of bacterial vaginosis [6]. This particular species of *Prevotella* is not usually present on normal skin and is infrequently an agent of infection. However, it can become pathogenic if it enters the body during invasive procedures or in immunocompromised individuals [7,8]. Infections can escalate to conditions such as necrotizing fasciitis or extensive tissue necrosis, necessitating prompt diagnosis in the acute phase. Previous instances of soft tissue infections caused by *Prevotella* species have been linked to invasive activities, including intravenous drug use, or associated with comorbidities such as insulin-dependent diabetes mellitus. To my knowledge, there have been no reported cases of *P. bivia* infections following aesthetic procedures. In this case report, we describe two severe cases where patients developed necrotizing fasciitis and significant soft tissue defects due to *P. bivia* infection.

CASE REPORT

Case 1

A 29-year-old woman presented with worsening inflammatory symptoms in the left lateral thigh area on the 17th postoperative day. She had undergone a fat harvest from the vulvar area and fat grafting to the lateral buttocks, thighs, and buttocks at a private

Received: Dec 23, 2024 Revised: Jan 12, 2025 Accepted: Jan 13, 2025

Correspondence: Kyunghyun Min

Department of Plastic and Reconstructive Surgery, Gangnam Severance Hospital, Yonsei University College of Medicine, 211 Eonju-ro, Gangnam-gu, Seoul 06273, Korea

E-mail: drmkh83@yuhs.ac

© 2025 The Korean Society for Aesthetic Plastic Surgery.

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<https://creativecommons.org/licenses/by-nc/4.0/>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited. www.e-aaps.org



Fig. 1. A 29-year-old woman presented with worsening inflammatory symptoms in the left lateral thigh area following a fat graft. (A) Skin and soft tissue necrosis ensued due to an infection caused by *Prevotella bivia*. (B) Despite multiple incision and drainage procedures, intravenous antibiotics, and negative pressure wound therapy, a 6×2.5 cm skin defect persisted. To address this issue, a full-thickness skin graft was performed.

aesthetic clinic only for women. On the 8th postoperative day, she developed swelling, erythema, and a sensation of heat at the left thigh fat graft site, accompanied by a fever spike. Despite intravenous cefazolin administration, her symptoms did not improve. Therefore, a tiny stab incision and a Penrose drain insertion were performed on the 13th postoperative day. Although her fever subsided by the 16th postoperative day, skin and soft tissue necrosis occurred and worsened (Fig. 1A).

After the patient was referred to the hospital, computed tomography (CT) was performed on the 18th postoperative day. It revealed an extensive area of postoperative fluid collection and fat necrosis, measuring 8.6×2.6×12 cm, in the left lateral gluteal subcutaneous region (Fig. 2). Bacterial culture identified *P. bivia* as the causative pathogen. Due to the need for a long incision to facilitate drainage, and the patient's desire to minimize or conceal the postoperative scar, incision and drainage were performed on the lateral gluteal area and the skin necrosis area of the anterolateral thigh. Two additional sessions of wound debridement and irrigation, combined with negative pressure wound therapy, were necessary. The infection caused by *P. bivia* was treated with piperacillin/tazobactam.

After 2 weeks of treatment, the symptoms had improved; however, a 6×2.5 cm skin defect persisted. To address this issue, a full-thickness skin graft using tissue from the left inguinal area was performed, successfully covering the wound (Fig. 1B).

Case 2

A 37-year-old woman visited the hospital due to severe pain and swelling in her right breast and left arm. Two weeks ago, she had undergone abdominal and arm liposuction, as well as fat grafting to the breasts and pelvic area at a private aesthetic clinic only for

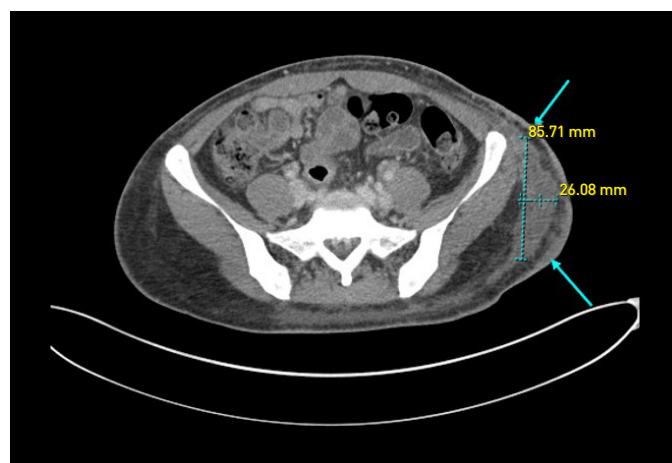


Fig. 2. Computed tomography was performed on the 18th postoperative day. It revealed an extensive fluid collection measuring 8.6×2.6×12 cm and fat necrosis in the subcutaneous area of the left lateral gluteal region.

women. On the 9th postoperative day, she developed mastitis in the right breast, necessitating incision and fat graft removal. By the 14th postoperative day, she exhibited signs of a soft tissue infection in her left arm, characterized by swelling, tenderness, and erythema (Fig. 3).

The CT scan revealed extensive edematous changes in the muscles of the left upper extremity, strongly suggesting a diagnosis of myositis. Additionally, subcutaneous tissue edema with gas formation was observed, raising suspicions of cellulitis (Fig. 4). Upon initial presentation, the patient experienced severe pain throughout the left arm. Measurements showed that the circumference of both the upper arm and forearm was more than twice that of the unaf-

fect side. Given these findings, conditions such as necrotizing fasciitis or compartment syndrome could not be ruled out. Consequently, an emergent fasciotomy of the left arm and incision and drainage of the right breast were performed (Fig. 5A).

To minimize scarring in this young female patient, multiple small incisions were made parallel to the skin folds of the left arm. This was followed by the application of negative pressure wound therapy and the placement of drains. A turbid abscess was drained, and bacterial culture identified *P. bivia*. Immediate intravenous administration of piperacillin/tazobactam was initiated. Throughout her hospitalization, she underwent three additional irrigation and debridement procedures (Fig. 5B). By the 30th postoperative day,

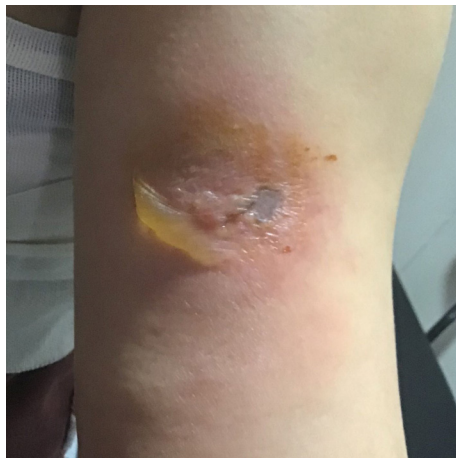


Fig. 3. A 37-year-old woman presented with pain in her right breast and left arm. Two weeks prior, she had undergone abdominal and arm liposuction. By the 14th postoperative day, she developed signs of a soft tissue infection in her left arm, characterized by swelling, tenderness, and erythema.

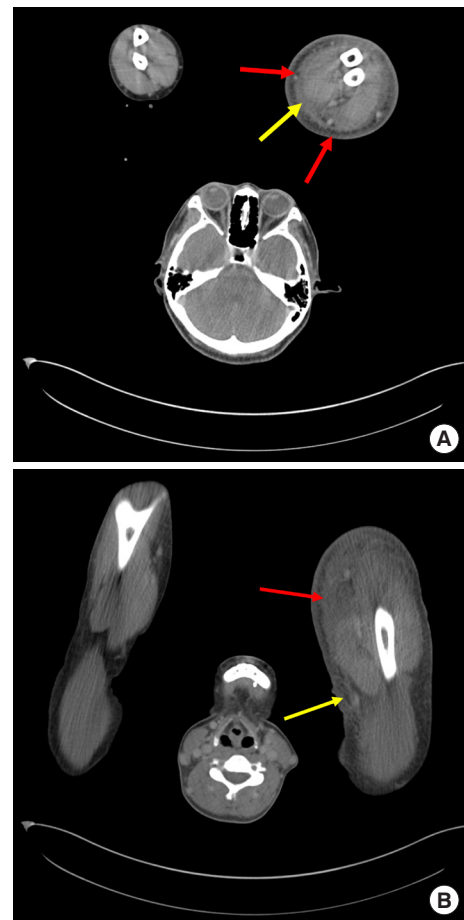


Fig. 4. Computed tomography (CT) scan of case 2. (A) A CT scan revealed a prominently enlarged forearm. Subcutaneous gas formation was observed (red arrows), along with edematous changes in the entire forearm muscles (yellow arrow). (B) A CT scan revealed severe edematous changes in the left upper arm muscles (red arrow), indicative of myositis. Additionally, diffuse subcutaneous edema was observed, a finding suggestive of cellulitis (yellow arrow).



Fig. 5. Intraoperative findings. (A) Since necrotizing fasciitis could not be ruled out, an emergent fasciotomy of the left arm and incision and drainage of the right breast were performed. (B) On the 25th postoperative day, wound approximation was performed. Some incision sites were incompletely closed due to severe induration (yellow arrow).

the patient demonstrated significant improvement in her infection symptoms and was discharged without any recurrence. However, during follow-up, hypertrophic scarring and fibrosis were observed in the right breast and left arm.

DISCUSSION

Prevotella species are pathogens commonly found in various anatomical sites, including the oral mucosa, intestinal mucosa, and urogenital tract. These bacteria are linked to a variety of infections, including periodontitis, peritonitis, intra-abdominal abscesses, and skin and soft tissue infections. Among these, *P. bivia* is an anaerobic bacterium recognized as a causative agent of bacterial vaginosis [9,10].

In the two cases discussed, infections occurred at the sites of fat grafting, with *P. bivia* identified through bacterial culture. *P. bivia* is typically found only in the female genital area. In one of the cases, the patient who developed symptoms in the lower extremity had a history of vaginitis. The other patient had undergone a loop electrosurgical excision procedure a year prior. These details may indicate the potential for *P. bivia* colonization in the vaginal mucosa. In the first case, pubic fat was harvested and injected into the gluteal area, which suggests the possibility of contamination either during the liposuction process or via the cannula used for the fat injection. Additionally, both patients received treatment at a clinic specializing in liposuction and fat grafting for women, and symptoms appeared postoperatively. This situation points to the potential contamination of devices prepared before surgery.

Both cases resulted in extensive infections, including necrotizing fasciitis, which required full-thickness skin grafting in one instance and a fasciotomy in the other. To avoid such severe complications, it is crucial to conduct a comprehensive collection of the patient's medical history, particularly any history of pelvic inflammatory disease. If the medical history is pertinent, a 7-day course of oral/topical metronidazole or a 5-day course of topical clindamycin should be prescribed. Furthermore, fat harvested from the pubic area should not be used for fat grafting. Cannulas utilized for collecting pubic fat should not be reused to harvest fat from other body areas.

Despite preventive measures, infections may still occur. If a patient's condition fails to improve or deteriorates even after the administration of broad-spectrum antibiotics, clinicians should consider the possibility of a *P. bivia* infection. In such instances, it is advisable to adjust the current antibiotic regimen or introduce additional antibiotics specifically targeting this pathogen. Since *P. bivia* may be β -lactamase positive, recommended treatment options include antibiotics such as clindamycin, amoxicillin/clavulanate, metronidazole, piperacillin/tazobactam, ciprofloxacin, or imipenem [11-13].

NOTES

Conflict of interest

Tai Suk Roh is an editorial board member of the journal but was not involved in the peer reviewer selection, evaluation, or decision process of this article. No other potential conflicts of interest relevant to this article were reported.

Ethical approval

The study was approved by the Institutional Review Board of Gangnam Severance Hospital.

Patient consent

The patients provided written informed consent for the publication and use of their images.

ORCID

Jooyeop Lee	https://orcid.org/0009-0009-2545-0562
In Sik Yun	https://orcid.org/0000-0003-1103-7047
Tai Suk Roh	https://orcid.org/0000-0001-8681-159X
Young Seok Kim	https://orcid.org/0000-0002-0981-2107
Kyunghyun Min	https://orcid.org/0000-0002-7807-0143

REFERENCES

1. Igra H, Lanzer D. Avoiding complications. In: Hanke CW, Sattler G, editors. Liposuction. Elsevier Saunders; 2005. p. 131-40.
2. Toledo LS, Mauad R. Complications of body sculpture: prevention and treatment. Clin Plast Surg 2006;33:1-11.
3. Cuevas Bustos R, Cervantes Gutierrez O, Perez Tristan FA, et al. Necrotizing soft tissue infection after liposculpture; case report. Int J Surg Case Rep 2020;77:677-81.
4. Stevens DL, Bryant AE. Necrotizing soft-tissue infections. N Engl J Med 2017;377:2253-65.
5. Pasternack MS, Swartz MN. Cellulitis, necrotizing fasciitis, and subcutaneous tissue infections. In: Bennett JE, Dolin R, Blaser MJ, editors. Mandell, Douglas and Bennett's Principles and Practice of Infectious Diseases. W.B. Saunders; 2010. p. 1289-12.
6. Hillier SL, Krohn MA, Rabe LK, et al. The normal vaginal flora, H2O2-producing lactobacilli, and bacterial vaginosis in pregnant women. Clin Infect Dis 1993;16 Suppl 4:S273-81.
7. Ling J, Hirase T. Necrotizing fasciitis due to *Prevotella denticola* infection in an intravenous drug user. Cureus 2022;14:e20901.
8. Lepivert JC, Guinet V, Auquit-Auckbur I. Necrotizing fasciitis of the hand and wrist due to *Prevotella bivia*. J Hand Surg Eur Vol 2015;40: 757-8.
9. Sharma G, Garg N, Hasan S, et al. *Prevotella*: an insight into its characteristics and associated virulence factors. Microb Pathog 2022;169: 105673.
10. Randis TM, Ratner AJ. Gardnerella and *Prevotella*: co-conspirators in

-
- the pathogenesis of bacterial vaginosis. *J Infect Dis* 2019;220:1085-8.
11. Egwari LO, Rotimi VO, Coker AO. Antibiotic susceptibility of clinical isolates of *Prevotella bivia* in Lagos, Nigeria. *J Chemother* 1996;8:47-51.
12. Mirza A, Bove JJ, Litwa J, et al. Mixed infections of the paronychium with *Prevotella bivia*. *J Hand Microsurg* 2012;4:77-80.
13. Sherrard LJ, Graham KA, McGrath SJ, et al. Antibiotic resistance in *Prevotella* species isolated from patients with cystic fibrosis. *J Antimicrob Chemother* 2013;68:2369-74.