

Dermal Complication of the Bowel Bypass Syndrome: A Case Report

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Bowel bypass surgery, which involves shortening the small bowel to about 45 cm, is a modality of treatment for morbid obesity. Although this procedure is not routinely performed today, patients with complications from this procedure are still seen by physicians. The

case of a patient who had bowel bypass surgery and experienced subsequent complications is discussed.

Key words. Jejunioileal bypass; postoperative complications; arthritis; dermatitis; pneumonia. (*J Fam Pract* 1993; 36:564-566)

Bowel bypass surgery is a weight-reduction modality offered to morbidly obese patients. The procedure has been available for several years, although it is rarely performed today. It involves shortening the small bowel by forming a bypass of a large portion of small bowel leaving approximately 35 cm of jejunum and 10 cm of ileum.¹⁻¹¹ Hence, food that enters the stomach travels through only about 100 cm of small bowel before it enters the cecum, thus reducing the amount of nutrients absorbed.¹⁻¹¹ A blind loop is formed with the remainder of the small bowel, with one end sewn closed and the other end anastomosed either to the colon or terminal ileum.⁵ Complications that often occur following bowel bypass surgery include arthritis, dermatitis, and liver dysfunction.²⁻⁶ The "bowel bypass syndrome" consists of a characteristic, intermittent neutrophilic dermatosis often associated with polyarthritis, tenosynovitis, malaise, fever, and cryoglobulinemia.²

Case Report

A 43-year-old woman was admitted to the Medical College of Georgia Hospital for evaluation of multiple complaints including pustular skin lesions that had erupted 4 days before admission (Figure 1). They had initially

started as macules on the neck, arms, hands, and upper chest, and became vesicular within 36 hours. A day later, they became pustules. The patient denied any pruritus. Other symptoms included generalized malaise, a nonproductive cough that had become productive with yellow-green sputum during the last week, and intermittent epigastric abdominal pain without associated nausea, vomiting, diarrhea, or constipation. The patient said that she had experienced similar symptoms two or three times before and that the lesions had cleared and the other symptoms had resolved after treatment with antibiotics. Four days before admission, the patient had also noted pain and swelling of the joints of her hands, ankles, knees, and elbows.

The patient denied any drug allergies and had no history of exposure to toxic chemicals. Her current medications included levothyroxine, 0.1 mg once a day, and ciprofloxacin, 500 mg twice a day, the latter started 2 days before admission.

She had a prior history of alcohol abuse, a surgical history of thyroidectomy, appendectomy, cholecystectomy, and bilateral tubal ligation, as well as ileojejunum bypass surgery for morbid obesity in 1980, and a history of seizure disorder secondary to head trauma. She denied prior tuberculosis, asthma, peptic ulcer disease, or pneumonia. She also denied any current alcohol, tobacco, or recreational drug use.

Physical examination revealed a temperature of 98.6°F (37°C), pulse 80 beats per minute, respiratory rate 18 breaths per minute, and blood pressure 130/60 mm Hg. Findings of the physical examination included a

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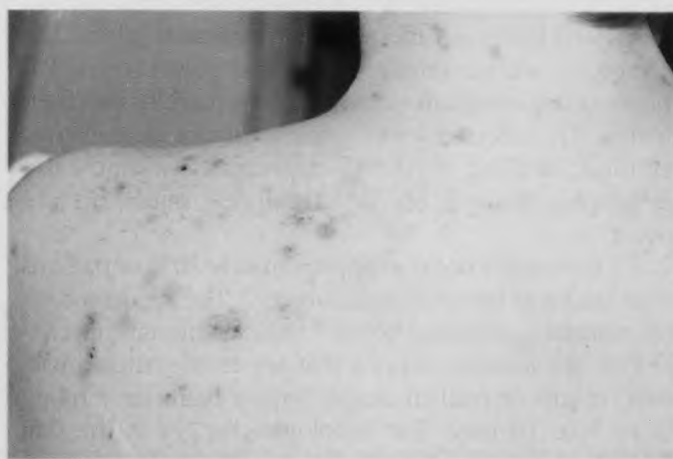


Figure 1. Erythematous lesions on the wrist area (*left*) and posterior left shoulder (*right*) of a patient who had undergone bowel bypass surgery.

grade 1 systolic murmur at the aortic area without radiation, decreased breath sounds in the right upper lobe, swelling of the metacarpophalangeal joints bilaterally, and multiple discrete and coalesced pustules on the neck, anterior chest, upper back, upper arm, and both knees. No lesions were noted on the abdomen, ankles or feet.

Results of laboratory studies were as follows: sedimentation rate was 120 mm/h; complete blood count, ANA and ENA tests, rheumatoid factor, cold agglutinins, blood cultures, urinalyses, urine cultures, electrocardiogram, SMA-18, HIV antibody, viral cultures, stool O/P, toxoplasmosis titer, and a PPD test were either negative or within normal limits. A Gram stain of the skin lesions revealed polymorphonuclear cells but no bacteria. A chest radiograph taken at admission revealed a right upper lobe consolidation with areas of cavitation and a diffuse interstitial infiltrate.

On the third day of hospitalization, skin biopsies of lesions from the right index finger and upper back were interpreted as pustular vasculitis (Figure 2). Diagnoses of bowel bypass syndrome and cavitating pneumonia were made. The patient was treated with erythromycin, 500 mg four times a day; in addition, ciprofloxacin, 500 mg twice a day, was continued. These antibiotics were chosen because of the possibility of Legionnaires' disease.

On the fifth day after presentation, all lesions had crusted. Ciprofloxacin was discontinued. A repeat chest radiograph showed the continued presence of right upper lobe pneumonia. A culture was obtained by bronchoscopy, which was negative for *Pneumocystis carinii* and fungal cultures. No lesions were identified at bronchoscopy, and the results of a transtracheal biopsy were negative. The course of the illness, with the exception of the pneumonia, was consistent with bowel bypass syndrome.

By day 9, all lesions were gone and the right upper

lobe pneumonia had resolved. The patient was discharged and instructed to complete the 2-week course of erythromycin.

Discussion

Most of the information concerning this syndrome has been published in the dermatology or surgical literature.¹⁻¹⁰ During the 1970s and 1980s, up to 20,000 bowel bypasses were performed annually in the United States. Given these numbers, there is a strong possibility that the family physician will encounter a patient with this syndrome sometime in his or her practice.

The arthritis and tenosynovitis tend to affect the hands and wrists during the eruption of the skin lesions.

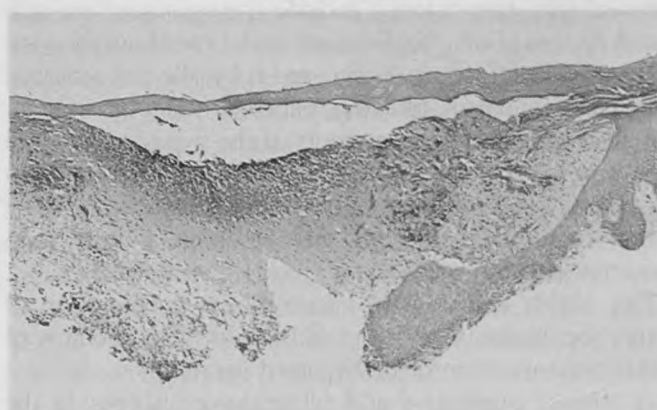


Figure 2. Biopsy of an erythematous lesion on a patient who had undergone bowel bypass surgery. The stratum corneum is covered by a thick scaled crust composed of serum, protein debris, and neutrophils. The epidermis shows evidence of intraepidermal vesicle. Numerous neutrophils and protein debris are present within its cavity, which is characteristic of bowel bypass syndrome. In the dermis, an inflammatory infiltrate involving both plexuses can be seen.

Peripheral joints are affected more than axial joints. The symptoms are variable, episodic, and polyarticular. Patients often complain of an inability to fully use their hands. The affected joints usually do not demonstrate effusion, swelling, erythema, or increased warmth. Radiographic changes are rare, and deformities do not occur.

Dermatoses occur in approximately 20% of patients who undergo bowel bypass surgery.¹ The syndrome often mimics gonococcal sepsis.² Skin manifestations consist of characteristic lesions that are erythematous macules, round or oval in shape, with a diameter ranging from 3 to 10 mm. The histologic changes in the skin lesions consist of neutrophilic invasion of the venules with a perivascular mononuclear cell infiltrate. Several authors have reported skin lesions as a complication of bypass surgery.³⁻⁶ As in the case presented, these lesions appear as erythematous macules of varying size. Within 12 hours, these lesions indurate and become palpable, raised pink papules that resemble insect bites. The lesions may then remain as papules for several days or become intensely inflamed with the formation of small vesicles that become pustular and appear similar to gonococcal lesions.³⁻⁶ They may become painful or pruritic, or remain asymptomatic. These lesions may cluster and linger for up to 8 days. When cultured, the pustules are sterile. The syndrome may never recur or may recur periodically in the patient.

Mechanism of the Disease

Structural changes in the nonfunctional segment of the bowel (the empty loop) include hypoplasia of the villi and decreased cell proliferation, with or without mucosal atrophy. Enteritis may occur, and is usually characterized by abdominal pain, bloating, diarrhea, and fever.⁵ Quantitative cultures of the contents of the bypassed jejunum have revealed 10^6 /mm to 10^9 /mm organisms as compared with 10^5 /mm organisms in the normal bowel. The shortening of the intestinal tract results in a higher than normal concentration of bile acids in the large bowel. This highly acidic environment allows proliferation of anaerobes in the large bowel and results in an overflow of these organisms into the bypassed jejunum.

These qualitative and quantitative changes in the intestinal bacterial content of the bowel are considered to be the underlying cause of bowel bypass syndrome. It has also been postulated that there is a proliferative production of immunoglobulin A (IgA) to the bacterial cell wall, which consists of peptidoglycan, a large macromol-

ecule that surrounds the cell membrane and is responsible for the rigidity of the cell wall in all bacteria. It has been demonstrated that injection of purified cell wall peptidoglycan can produce an arthritis and dermatitis similar to that seen in the bowel bypass syndrome.⁸

Pneumonia as a possible component of bowel bypass syndrome has not been mentioned or addressed in the medical literature. In this patient, all cultures were negative, and skin lesions and pneumonia were resolved by the 9th day with erythromycin treatment. It is therefore unclear whether pneumonia was part of the same syndrome or a comorbid illness that was not related to the patient's bowel bypass.

Treatment

Proposed treatments of bowel bypass syndrome have included low-dose steroids, tetracycline or minocycline, and sulfapyrazine or metronidazole. The one specific, fully efficacious treatment for this disorder is to restore normal bowel anatomy by removing the bypass. When this is done, a concurrent gastric stapling operation may be indicated to ensure that weight loss is maintained.¹¹

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