ELSEVIER

Surgery for Obesity and Related Diseases ▮ (2014) 00–00

SURGERY FOR OBESITY AND RELATED DISEASES

Original article

Psoriasis improvement after bariatric surgery

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Received December 14, 2013; accepted March 31, 2014

Abstract

Background: Psoriasis is a chronic inflammatory skin disease known to be associated with obesity and metabolic syndrome. Single case reports and small series suggest remission or improvement after bariatric surgery, hypothetically through a GLP-1 mediated mechanism. The objective of this study was to investigate on the effect of bariatric surgery on the clinical behavior of psoriasis in obese patients.

Methods: A total of 33 morbidly obese individuals with psoriasis who were on active medical treatment were identified. Demographic characteristics and follow-up data were extracted from our database. Medication usage and percentage of affected body surface area (%ABSA) were recorded preoperatively and at least 6 months after bariatric surgery.

Results: Nine (27.2%) patients were on systemic therapy at baseline. At a mean follow-up time of 26.2 ± 20.3 months, a mean excess weight loss (EWL) of 48.7 ±2 6.6% was achieved. This was associated with improvement of psoriasis based on downgrade of medication and %ABSA in 30.3% and 26.1% of patients, respectively. In total, 13 of 33 patients (39.4%) had improvement based on either criteria. Eight (24.2%) patients were not on any psoriasis medication at the latest follow-up ($P = .001$). Older age at the time of surgery (54.8 ± 8.1 versus 48.1 ± 10.4 years, $P = .047$), Roux-en-Y gastric bypass versus nonbypass procedures (52.4% versus 16.7%, $P = .043$), and greater EWL (64.2 ± 26.0% versus 43.4 ±23.6%, $P = .036$) predicted improvement. Only 1 (3%) patient experienced worsening after surgery.

Conclusion: Almost 40% of our cohort showed improvement of psoriasis several months after bariatric surgery. Improvement is directly related to the degree of postoperative weight loss and is associated with the Roux-en-Y configuration. (Surg Obes Relat Dis 2014;▮:00–00.)

Keywords: Bariatric surgery; Psoriasis; GLP-1; Metabolic syndrome; Gastric bypass

Psoriasis is a chronic inflammatory skin disease that affects 1–4% of the world's population [1]. Patients with psoriasis are affected by chronic skin lesions that may involve any part of their body and usually require long-term treatment that negatively affects their quality of life [2]. It is well known that obesity is a risk factor for psoriasis and increased body mass index (BMI) is associated not only with greater extent of the disease, but also more refractory disease [3,4]. The association between psoriasis and obesity has been postulated as a complex interplay between the immune system, adiposity and metabolic dysregulation [5]. Although the exact mechanism of this relationship is unknown, investigators hypothesize that an increase in proinflammatory cytokines such as (tumor necrosis factor α), interleukin (IL)-1, IL-6, IL-8, and leptin) synthesized by adipose tissue in obese individuals plays a central role. Obesity is linked with low-grade

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http://dx.doi.org/10.1016/j.soard.2014.03.025

systemic inflammation that in theory may precipitate and/or exacerbate psoriatic lesions in overweight and obese individuals [1].

The obesity epidemic continues to grow worldwide and surgery remains the only effective and durable therapy for many individuals [6]. Bariatric surgery has been shown to induce weight loss, improve quality of life, and reduce co-morbidities [7]. Currently, the effect of bariatric surgery on psoriasis has not been well studied. Case reports suggest that Roux-en-Y gastric bypass (RYGB) in patients with psoriasis could result in complete resolution of the disease [8]. Further small series support the benefits of weight loss surgery on the behavior of psoriasis. The aim of this study is to further clarify these findings and identify predictive factors of psoriasis resolution after bariatric surgery.

Methods

This was an Investigative Research Board approved retrospective chart review of all morbidly obese individuals with psoriasis who underwent bariatric surgery at our center between January 2004 and December 2012. We identified morbidly obese patients with psoriasis who were on active medical treatment at the time of surgery. Demographic characteristics (age, sex, and related co-morbidities) and follow-up data were extracted and analyzed to assess preoperative and postoperative parameters and outcomes.

Psoriasis medication types and status and the percentage of affected body surface area (%ABSA) were recorded before surgery and at least 6 months after the intervention. The %ABSA was calculated based on the dermatologist's assessment, according to the National Psoriasis Foundation's palm method (the surface area of the hand corresponds to 1%) [9]. Improvement of psoriasis was defined as a decrease in %ABSA and/or a downgrade in 1 or 2 of the 3 treatment classes (no treatment, local and systemic therapy). The presence of a Koebner lesion (development of isomorphic pathologic psoriatic lesions at the operative site scar) was recorded, if present during follow-up [10].

Remission of type 2 diabetes mellitus (T2DM) was defined as glycated hemoglobin (HbA1 c) $< 6.5\%$ and fasting blood glucose (FBG) < 126 mg/dL without diabetic medications. Clinical improvement of T2DM was defined as significant reduction in HbA1 c (by $> 1\%$), FBG (by > 25 mg/dL), or diabetes medication requirement [11].

Treatment goals of co-morbidities were defined based on the American Diabetes Association criteria for control of diabetes (HbA1 c $< 7\%$), blood pressure ($< 130/80$ mm Hg), and cholesterol (LDL < 100 mg/dL).

Data were analyzed using SPSS version for Windows (SPSS, Inc., Chicago, IL, USA). Results were expressed in mean ± SD, and frequency (%). Statistical significance of means and proportions was tested with T test and Z-test, respectively. Categorical variables were analyzed with X^2 or Fisher's exact tests. Statistical significance was considered at $P < .05$.

Results

A total of 33 patients with psoriasis were identified. Most patients were female (60.6%). Mean age of the studied population was 50.8 ± 10.0 years and the mean duration of psoriasis before bariatric surgery was 24.0 ± 9.0 months. Psoriatic arthropathy and family history of psoriasis were present in 24.2% and 9.1%, respectively. Presurgical treatment of psoriasis included local therapies in 24 (72.7%) patients and systemic medication in 9 patients (27.2%). Systemic agents included Methotrexate, oral corticosteroids, and biologics (tumor necrosis factor α blockers). Metabolic co-morbidities included T2DM (63.6%), hypertension (69.7%), and dyslipidemia (75.7%).

Bariatric procedures included RYGB (n = 21), sleeve gastrectomy (SG) (n = 8), and laparoscopic adjustable gastric banding (n = 4). There were no conversions to open surgery in our cohort, and no major postoperative complications occurred. Mean BMI at the time of surgery was 50.2 ± 10.1 kg/m^2, and BMI decreased to 38.5 ± 9.8 at a mean follow-up period of 26.2 ± 20.3 months (range, 6–77), which corresponded to mean percent excess weight loss (EWL) of 48.7 ± 26.6%. Table 1 summarizes the metabolic profile of patients at baseline and follow-up.

A total of 13 patients (39.4%) reported improvement in psoriasis after the surgical intervention based on downgrade in medication category (30.3%) and %ABSA (26.1%). Eight patients (24.2%) were not on any medication at the latest follow-up point ($P = .001$). Six (75%) of them underwent RYGB, 1 (12.5%) had a SG, and 1 (12.5%) a laparoscopic adjustable gastric banding. Only 1 patient (3%), who underwent a SG, experienced worsening of psoriasis after bariatric surgery. Five (15.1%) patients were on a systemic medication at follow-up. A significant reduction in %ABSA was observed after bariatric surgery

Table 1
Metabolic profile of patients with psoriasis after bariatric surgery (n=33)

Metabolic parameters*	Baseline	Follow-up	*P* value
BMI (kg/m^2)	50.2 ± 10.1	38.5 ± 9.8	<.001
A1C (%)	7.9 ± 1.3	6.4 ± 1.2	.007
FBG (mg/dL)	138.3 ± 58.9	101.3 ± 27	.005
LDL cholesterol (mg/dL)	111.2 ± 29.2	81.5 ± 29.2	.001
HDL cholesterol (mg/dL)	55.5 ± 23.7	66 ± 20.1	.002
Triglycerides (mg/dL)	140.9 ± 86.4	116.9 ± 116	.236
American Diabetes Association goals			
A1C < 7% (%)	23.1	61.5	.038
BP < 130/80 mmHg (%)	19.4	51.6	.005
LDL < 100 mg/dL (%)	35.7	78.6	.014

BMI = body mass index; BP = blood pressure; FBG = fasting blood glucose; HbA1c = glycated hemoglobin A1c; HDL = high density lipoprotein; LDL = low density lipoprotein

*Values are mean ± SD.