Excisional Lipectomy for HIV-Associated Cervicodorsal Lipodystrophy

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BACKGROUND: The development of effective antiretroviral therapy for the treatment of human immunodeficiency virus (HIV) has allowed for prolonged and healthier lives for affected patients. However, significant side effects from the drugs have been well documented, including syndromes of abnormal fat distribution. Cervicodorsal lipodystrophy, or “buffalo hump” deformity, is a common presentation of lipodystrophy syndrome and can cause significant disfigurement to the patient. Surgical correction has been the mainstay of treatment.

OBJECTIVE: The authors report on the use of excisional lipectomy to correct cervicodorsal lipodystrophy.

METHODS: Six male patients and one female patient (mean age, 47.2 years) underwent excisional lipectomy for buffalo hump deformity caused by HIV protease inhibitor use. Common complaints on presentation included disfigurement, neck pain, and difficulty sleeping. Deformity had first been observed an average of 4.75 years before presentation (range 2 to 7 years). At the time of consultation all patients were on antiretroviral regimens that included protease inhibitors.

RESULTS: Excisional lipectomy of the hypertrophied cervicodorsal fat pad was performed on all patients, with suction-assisted lioplasty (SAL) additionally to optimally contour the nondystrophic fat at the periphery of the resection. One patient also underwent simultaneous abdominoplasty, another underwent rhytidectomy with autologous fat transfer, and one patient received malar autologous fat injections. The average operative time for all procedures was 2.7 hours (range 1.0 to 5.8 hours). Complications included seroma in three cases and wound dehiscence in one patient, none of which required reoperation. At an average of 26.6 months of follow-up, all patients report satisfaction with their results, and there have been no recurrences.

CONCLUSIONS: Cervicodorsal lipodystrophy is a well-described complication of extended use of HIV protease inhibitor therapy. Patients may seek consultation with plastic and reconstructive surgeons for correction of the aesthetic and functional morbidity associated with the deformity. Because of the fibrous nature of the hypertrophied cervicodorsal fat and the high rate of recurrence after SAL alone, an approach with excisional lipectomy (with or without SAL) may provide improved results and superior long-term outcomes. (Aesthetic Surg J 2008;28:147–152.)

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significant psychological impact on affected patients, both in serving as a visible reminder of the disease and in association with the social stigma of HIV infection.

Cervicodorsal fat pad enlargement, or “buffalo hump” deformity, can be particularly distressing to patients, from both a psychological and a physical standpoint. Patients often have associated symptoms of neck pain, difficulty sleeping, or postural changes, in addition to their disfigurement. These complaints may lead to decreased adherence to antiretroviral regimens and subsequent diminished effectiveness of medical therapy.

Management strategies to address the deformity have included cessation of the presumed causative antiretroviral agent, which has led to inconsistent improvement of HIV-associated lipodystrophy symptoms. Given the potential of this approach to compromise the patient’s HIV treatment, other methods to directly address the hypertrophied cervicodorsal pad have been utilized, including surgical intervention. Prior attempts at surgical correction, however, have shown mixed results, with some studies demonstrating high rates of recurrence and many studies reporting follow-up time insufficient to evaluate lasting outcomes. This report addresses these deficiencies in the currently available literature in a review of the safety and outcomes of excisional lipectomy for HIV-associated cervicodorsal lipodystrophy.

PATIENTS AND METHODS

A retrospective review of patients presenting for surgical correction of HIV-associated cervicodorsal lipodystrophy over the past 3 years was performed. A total of 7 patients, 6 men and 1 woman (mean age, 47.2 years), underwent surgical correction of their deformity. Associated symptoms described on presentation included disfigurement, neck pain, decreased mobility, postural back pain, and difficulty sleeping. Although some patients had received a diagnosis of HIV infection and begun antiretroviral therapy as many as 15 years before presentation, patients reported first observing the development of their cervicodorsal deformity an average of 4.75 years before presentation (range, 2 to 7 years).

In spite of the disfigurement associated with their cervicodorsal fat pad hypertrophy, at the time of consultation all patients were on antiretroviral regimens that included protease inhibitors. Two patients had undergone prior unsuccessful attempts at correction with suction-assisted lipoplasty of the posterior neck.

SURGICAL TECHNIQUE

Patients were marked before surgery to outline the cervicodorsal area to be excised, as well as the region in which suction-assisted lipoplasty (SAL) would be performed (Figure 1). Routine surgical antibiotic prophylaxis was administered. The patient was placed in the prone position, and the cervical and dorsal regions were prepped and draped in sterile fashion.

Multiple small incisions were made within the area of cervicodorsal fat to be excised. Tumescent solution consisting of 1% lidocaine with epinephrine in lactated Ringer’s solution in a ratio of 1:100,000 was then infused into the region, followed by SAL with 3-mm and 4-mm cannulas to feather the area surrounding the hypertrophied fat pad to optimize postoperative contour. After SAL was complete, a vertical midline incision was made and carried down to the subcutaneous tissue. Skin and subcutaneous tissue flaps were elevated laterally to the terminus of the cervicodorsal fat pad and the hypertrophied fat was resected. A large Jackson-Pratt suction drain was then placed through a lateral stab incision and secured, after which the midline skin was closed in three layers. A sterile compressive dressing was then applied.

For patients undergoing additional procedures, such as abdominoplasty or rhytidectomy, these procedures were performed per standard operative protocol at this time. Patients received a 5-day postoperative course of antibiotics and returned for routine postoperative follow-up visits.

RESULTS

All 7 patients underwent excisional lipectomy of their hypertrophied cervicodorsal fat pad, with 5 patients additionally receiving SAL to the periphery of the region (Table). At the time of the procedure 3 patients underwent additional procedures, including an abdominoplasty, an autologous malar fat transfer, and an anterior neck lift and rhytidectomy with autologous fat transfer to the nasolabial folds. Average operative time for all procedures was 2.7 hours (range, 1.0 to 5.8 hours). Histopathologic examination of the excised specimens revealed fibrosclerotic regions of the adipose tissue and significant variation...
in the shapes and sizes of individual adipocytes as compared with normal adipose tissue (Figure 2).

There were no major postoperative complications; minor wound complications included seroma in three cases and wound dehiscence in one patient. Patients found to have seromas were managed by aspiration and drain placement when needed, whereas delayed wound healing was treated with observation and regular dressing changes. All complications were managed through regular office visits, and none required reoperation. Typical scar length seen after surgery was 10 cm (Figure 3), and there was no apparent widening of any scars. At an average of 26.6 months of follow-up, all patients reported satisfaction with their results, and there have been no recurrences.

**Case 1**

Patient 2 was a 37-year-old man who complained of anterior and posterior neck enlargement caused by protease inhibitor use. The symptoms developed 3 years before presentation, and the patient noted that they had gradually progressed since that time. He additionally experienced neck discomfort, impaired neck mobility, and postural back pain. His initial procedure involved excision and SAL of the hypertrophied cervicodorsal fat pad, which was followed by anterior neck lift and rhytidectomy 10 months later. There have been no postoperative complications from either of his procedures at more than 3 years follow-up, and he is quite pleased with his aesthetic and functional improvements (Figure 4).

**Case 2**

Patient 5 was a 48-year-old man who presented after cervicodorsal lipodystrophy developed 7 years before initial consultation. He had begun an antiretroviral regimen containing a protease inhibitor 8 years before the onset of posterior neck enlargement. He additionally complained of anterior neck lipodystrophy and facial lipodystrophy. The patient underwent excisional lipectomy and SAL of the cervicodorsal fat pad, as well as rhytidectomy and anterior neck lift with submental fat excision and autologous fat transfer from the abdomen to the nasolabial folds bilaterally.

After surgery, a seroma developed in the posterior neck wound, which was managed by initial aspiration and sub-

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**Table.** Results from patients undergoing excisional lipectomy for cervicodorsal lipodystrophy

<table>
<thead>
<tr>
<th>Patient</th>
<th>Age (y)</th>
<th>Primary procedure</th>
<th>Additional procedures</th>
<th>Postoperative complications</th>
<th>Treatment of complications</th>
<th>Follow-up (mo)</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>45</td>
<td>Excisional lipectomy</td>
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<td>Seroma</td>
<td>Aspiration</td>
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<td>2</td>
<td>37</td>
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<td>None</td>
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<tr>
<td>3</td>
<td>46</td>
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<td>–</td>
<td>23.5</td>
</tr>
<tr>
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<td>None</td>
<td>Seroma, wound dehiscence</td>
<td>Aspiration, observation</td>
<td>22.25</td>
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<td>5</td>
<td>48</td>
<td>Excisional lipectomy, SAL</td>
<td>Rhytidectomy with autologous fat transfer to nasolabial folds</td>
<td>Seroma, wound dehiscence</td>
<td>Aspiration, observation</td>
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<td>45</td>
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<td>Autologous fat transfer to malar region</td>
<td>Seroma</td>
<td>Multiple aspirations</td>
<td>13.5</td>
</tr>
</tbody>
</table>

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**Figure 2.** Histologic specimen of (A) abnormal fat from lipodystrophy excision demonstrating fibrous septae and significant variability among adipocytes as compared with (B) normal fat.
sequent drain placement because of recurrence of the fluid collection, after which time the seroma resolved. Twenty-one months after surgery, the patient has achieved significant aesthetic improvement (Figure 5).

**DISCUSSION**

Cervicodorsal lipodystrophy is a well-described manifestation of HIV-associated lipodystrophy. Multiple studies have attempted to better understand the pathogenesis responsible for the condition, yet the precise mechanism has not yet been determined. Proposed hypotheses have included local effects of increased glucocorticoid production, inhibition of adipocyte differentiation, impaired activity of glucose transporters, and mitochondrial toxicity, among others. Although further research efforts are in progress to define the pathologic basis for the condition in the hope of developing prevention and treatment strategies for HIV-associated lipodystrophy, current therapies have been targeted toward specific clinical aspects of the syndrome as a means of relieving patient symptoms.

Treatment for cervicodorsal fat pad enlargement has been challenging, as the hypertrophied fat is notoriously resistant to most attempted therapies. The effects of cessation and alteration of antiretroviral therapies on the presence of the deformity have been studied extensively, but results have not shown consistent improvement in either the cervicodorsal hypertrophy or on the other
manifestations of the syndrome. Additionally, the critical importance of maintaining adequate HIV control has made many physicians wary of frequent medication adjustments or removing protease inhibitors, which have been critical to the success of antiretroviral therapy, from drug regimens. Although other medical treatments, including recombinant growth hormone and anabolic steroids, have been used with varied improvement, surgical approaches have been the mainstay of correction of cervicodorsal enlargement.

Surgical management of HIV-associated lipodystrophy syndrome typically uses SAL to remove hypertrophied fat from the cervicodorsal region. Wolfort et al described the use of tumescent SAL in 2 patients with cervicodorsal fat pad enlargement, both of whom achieved satisfactory outcomes. Additional case reports have demonstrated some improvement with the use of SAL, although resolution of the fat pad was not completely achieved. These earlier studies, however, did not address the period over which these patients were monitored, making accurate assessment of rates of recurrence difficult.

Later patient series evaluating larger groups of patients demonstrated varied success using lipoplasty, although documentation of sufficient follow-up and patient results has been inconsistent. The potential benefit of ultrasonic-assisted tumescent lipoplasty (UAL) rather than traditional SAL for the treatment of cervicodorsal hypertrophy was also proposed, which led several authors to investigate this technique. Piliero et al reported on 10 patients who underwent UAL, five of whom (50%) had development of recurrence of the cervicodorsal fat pad within an unspecified period of time. More recently in the otolaryngology literature, a series of 5 patients who underwent UAL was presented, which described satisfactory results, yet 2 patients (40%) required additional procedures for complete resolution of their deformity. Further studies with SAL have reported the need for a secondary procedure in 1 of 5 patients (20%) over a mean follow-up of 12 months in one patient series and a recurrence rate of 6.7% in another series, with an average follow-up of 19 months.

Although the use of UAL or SAL for correction of cervicodorsal fat pad hypertrophy is appealing, given its rel-

Figure 5. A, Preoperative view of a 48-year-old man with cervicodorsal lipodystrophy that developed 7 years before his initial consultation. He also complained of anterior neck lipodystrophy and facial lipoatrophy. B, Postoperative view 21 months after excisional lipectomy, SAL of the cervicodorsal fat pad, rhytidectomy, anterior neck lift with submental fat excision, and autologous fat transfer from the abdomen to the nasolabial folds bilaterally.
a relatively noninvasive approach and the consequent minimal scarring and low rate of complications, in our experience and that of others,\textsuperscript{15,22} the hypertrophied fat in these patients is very fibrous, making passage of the lipoplasty cannulas into the region quite difficult. The high rates of recurrence seen in some studies with lipoplasty alone may indicate that insufficient removal of abnormal cervicodorsal fat allows for hyperplasia and subsequent hypertrophy of remaining adipocytes, thus causing reaccumulation of the cervicodorsal fat pad.

CONCLUSION

Given the limitations of SAL alone, we have chosen to use excisional lipectomy as the primary treatment for correction of this deformity, with SAL added when necessary for better contouring of the periphery of the excision. Although the procedure is more extensive and has a higher rate of complications than lipoplasty alone, when wound complications occur, they are minor and can be easily managed in the office setting. The excisional approach allows for complete resolution of the cervicodorsal fat pad at the time of the procedure and results that have been maintained for as many as 32 months of follow-up to date.\textsuperscript{11}

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DISCLOSURES

The authors have no disclosures with respect to this article.

REFERENCES