Upper-Extremity Self-Amputation and Replantation: 2 Case Reports and a Review of the Literature

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Background: Patients who deliberately amputate 1 or more of their own extremities present a unique set of challenges for the entire treatment team. Decisions regarding replantation of the amputated extremity must be made quickly, and the psychiatrist is involved early in the care of these difficult patients. Surgical staff may feel that replantation surgery is inappropriate for such patients, although there is limited literature addressing this issue. Therefore, the psychiatrist must also address the strong feelings that such patients generate in nonpsychiatric caregivers.

Method: Two cases of deliberate upper-extremity self-amputation are discussed, and the world literature on self-amputation and replantation from 1966 to the present, identified via a MEDLINE search, using the key words *self-amputation, self-inflicted, upper extremity,* and *amputation*, is reviewed.

Results: There have been 11 reported cases (plus 2 in the current report) of deliberate upper-extremity amputation in the last 30 years. All patients have been psychotic, and many of the case reports note that patients with this presentation are rarely suicidal. Instead, the amputation usually stems from psychotically driven feelings of guilt and concrete religious preoccupations. Patients who undergo replantation often are pleased with the reattachment, and both psychiatric and surgical outcomes appear to benefit from prompt and aggressive psychiatric treatment.

Conclusion: Patients who deliberately amputate one or more of their extremities can be unsettling as well as challenging. The psychiatrist must coordinate diagnosis and treatment among multiple services to ensure the best possible outcome. As replantation surgery becomes more common, the psychiatric implications of surgical reattachment are of increasing importance. More cases need to be described to better understand the best treatment options for this particular patient population.

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The individual who cuts off an extremity presents emergently and requires the attention of multiple services.[1–3] Management may be complicated by the individual's refusal to undergo surgical replantation, and a thorough psychiatric evaluation may not be possible, given the finite viability of the amputated limb. Strong feelings in surgical staff, who must operate on hostile and seemingly ungrateful patients, must be addressed.[3,4] Unfortunately, very little has been written on the subject, and the recent psychiatric literature fails to provide suggestions for timely and efficacious treatment.

This article presents 2 patients who each amputated 1 of their upper extremities and subsequently had the detached body part surgically replanted. In a review of the literature, the demographics of this patient population is addressed, and guidelines for treatment both in and out of the hospital are discussed. Finally, one must consider the strong feelings that this patient population evokes in caregivers. Thus, the role of the psychiatrist in helping hospital staff to empathically and professionally treat such patients is explored.

CASE REPORTS

Case 1

Mr. A, a 26-year-old single right-handed college student, was admitted to the surgical service after amputating his left hand with an electric saw. He stated that a few hours earlier he became frustrated at his inability to complete a homework assignment. Convinced he could do nothing right, he went to his garage and cut off his left hand with a circular electric saw. He then ran into the woods "to get the blood going," but soon felt light-headed and stopped at a pay phone to contact the police. When an ambulance met him at the phone, he informed the ambulance drivers that his left hand was still in his garage. Mr. A and his disconnected limb were then helicoptered to the hospital.

In the emergency room, Mr. A appeared depressed and sedate. He stated that he had wanted to relieve his anger over his inability to succeed in life, and he noted that he felt much better now that his amputation could serve as a reminder of his failures. He adamantly refused surgical replantation, despite the surgeons' belief that reattachment of his left hand was a viable option. Emergent psy-

chiatric consultation was ordered to determine whether the patient could competently refuse the procedure. Mental status examination revealed a calm, thin, disheveled young man who was alert and able to answer questions. His affect was flat, and he perseverated about his lack of self-worth. He denied any hallucinations or delusions, but his thought process seemed slow and stilted. The patient's family was strongly in favor of surgical reattachment. Deemed lacking in the capacity to accept or refuse replantation, Mr. A underwent emergency surgery.

After successful replantation, Mr. A was transferred to the surgical floor. However, on the night following his surgery he began unwrapping the bandages protecting his replanted hand. He told the on-call surgeon that he planned to detach his hand, and he was thus placed in locked restraints and treated with intravenous lorazepam. Psychiatric consultation again revealed an extremely flat affect. He was unable to provide a clear explanation for his actions, saying only that he "just needed to be smaller." He continued to deny hallucinations, delusions, or ideas of reference. Because of his continuing agitation, he was treated with haloperidol and kept in locked restraints with close 24-hour observation.

The following day, Mr. A was started on treatment with paroxetine and risperidone, and psychological testing confirmed depression and profoundly disordered thinking. Sixteen days after his surgery, Mr. A was transferred to the psychiatry service. He had made no more attempts to disrupt his bandages, and he had been diligently participating in physical therapy. He described his amputation as a "setback," but he was optimistic about his recovery.

Two and one-half weeks after psychiatric hospitalization, Mr. A was discharged to go home. Although surgical staff were originally unnerved by his attempts to disrupt the replantation and his apparent lack of regard for the severity of his amputation, they eventually were more comfortable as Mr. A's mental status and behavior improved. He is now followed in the outpatient department of the hospital where he received his treatment. He participates in weekly psychotherapy at his local community mental health center, and he takes his medications regularly. His thoughts continue to be somewhat bizarre, but he is more organized and goal-directed in his thinking, and his affect is markedly more animated. He has expressed no desire to harm himself, and he is pleased that his hand is attached and functioning well.

Case 2

Mr. B, a 52-year-old right-handed divorced white male, was helicoptered to our hospital after amputating his right hand with a circular saw. Initially seen at an outlying hospital, he refused replantation. Psychiatric consultation at that time revealed that Mr. B had become increasingly despondent over his inability to find work and was convinced that he was an intolerable burden to his family. Although he reported drinking steadily over the last few months, he denied any alcohol intake preceding the mutilation. He was vague in describing the particulars of his amputation, stating first that he had been cutting wood in his tool shed and that the saw had slipped and partially severed his right wrist. When he saw what he had done, he stated he decided to "go ahead and take the whole thing off." He then went back into his house, and informed his family that he had amputated his right hand. Because the outlying hospital was not equipped to perform replantation, Mr. B and his detached hand were helicoptered to our hospital.

Mr. B continued to refuse replantation. Psychiatric evaluation revealed a calm and tired-appearing man who simply sighed when questioned about replantation, asking "What's the point of it, anyhow?" When asked about his injury, he said he had cut his hand off on purpose, and he explained that he had led a "bad life" and had done "bad things" with his hand. Mr. B's son was present and informed the psychiatrist that his father had been acting strangely for the last few months. According to the son, Mr. B would often pace about the house muttering and at times would announce to his family that "they are going to catch me." He often worried about his inability to find work, and he wondered whether demons were responsible for his misfortunes. Because Mr. B was declared incompetent to consent to replantation, Mr. B's son gave consent and Mr. B went emergently to surgery.

Postoperatively, Mr. B was transferred to the surgical floor in restraints. However, he became extremely agitated and required large doses of antipsychotics. At one point, he was treated with succinylcholine paralyzation to protect the integrity of his surgical wounds. After 2 days he calmed, and psychological testing suggested profound psychosis as well as depression. The diagnosis of psychotic depression was made, and Mr. B was started on treatment with fluoxetine and risperidone. He was transferred to the psychiatric service on the 12th postoperative day, less psychotic but still depressed. He cooperated only partially with his hand exercises and spent large amounts of time staring at the bandages on his right hand. Surgical and psychiatric staff were substantially more pessimistic about Mr. B than they had felt about Mr. A. Eventually, Mr. B was transferred to a psychiatric inpatient unit in his hometown.

REVIEW OF THE LITERATURE

Method

The MEDLINE database (National Library of Medicine electronic database) was searched for articles written from 1966 to the present by cross-referencing the following key words: *self-amputation*, *self-inflicted*, *upper extremity*, and *amputation*. Moreover, the bibliographies of relevant articles were scanned in order to discover additional citations not yielded in the initial MEDLINE review. The objective

Table 1. Demographic Data for Population of Patients Who Self-Amputated Upper Extremities*

Case	Source	Age (y)/ Sex	Suicidal Ideation	Psychosis	Diagnosis
1	Goldwyn et al (1967)[5]	?/M	?	+	Schizophrenia
2	Jaffe et al (1975)[6]	23/M	?	?	?
3	Goldenberg and Sata (1978)[7]	18/M	–	+	Schizophrenia
4	Stewart and Lowrey (1980)[2]	55/M	–	+	Psychotic depression
5	Stewart and Lowrey (1980)[2]	37/F	+	+	Psychotic depression
6	Stewart and Lowrey (1980)[2]	57/M	+	+	Psychotic depression
7	Stewart and Lowrey (1980)[2]	53/M	+	+	Initially psychotic depression; changed to bipolar disorder
8	Hall et al (1981)[8]	22/M	?	+	Schizophrenia
9	Demuth et al (1983)[1]	34/M	–	+	Schizophrenia
10	Demuth et al (1983)[1]	37/F	–	+	Schizophrenia
11	Schweitzer (1990)[9]	29/M	+	+	Schizophrenia, bipolar disorder, schizoaffective disorder, and depression are suggested
12	Schlozman (1998)	26/M	–	+	Psychotic depression
13	Schlozman (1998)	52/M	–	+	Psychotic depression

*Symbols: + = yes, – = no, ? = unknown.

Table 2. Course of Recovery After Self-Amputation of Upper Extremity*

Case	Act	Motivation	Replantation	Outcome
1	Right hand with circular saw	Hand producing inferior paintings	?	?
2	Right hand with bread knife	?	+	?
3	Right hand with saw, throws hand in river; enucleates right eye	Performing mission for God, quotes Matthew 5:30	–	?
4	Right hand with circular saw	Guilt over inability to care for ailing mother	+	Poor compliance, suboptimal surgical result
5	Right hand with power saw, partial left hand with power saw	Guilt over extramarital affair; quotes Matthew 5:30	+	Poor compliance, suboptimal surgical result
6	Eight fingers with unnamed tool	Guilt, sadness, delusions of financial poverty	+	Poor compliance, suboptimal surgical result, commits suicide 13 months later
7	Partial right and left hand with knife, stabs self many times	Frustration over inability to complete work documents	+	Good control of bipolar disorder, good surgical result
8	Right hand and penis with axe	Gain God's favor after becoming sexually aroused by the family cat	+	Good control of psychosis, good surgical result
9	Partial left hand with ax	Told by cult that laws of karma demand left hand, offended the "astral beings"	+	Poor control of psychosis, good surgical result
10	Left hand with knife	Rid herself of a devil that had entered hand and made her do bad things	+	Poor control of psychosis, surgical result not mentioned
11	Left hand with hand saw and knife	Preoccupied with fear of AIDS	–	Amputates penis 3 years later
12	Left hand with circular saw	Frustrated with homework; "needed to be smaller"	+	Good control of psychosis, good surgical result
13	Right hand with circular saw	Burden to family; done "bad things" with hand	+	Poor compliance, at 2 months suboptimal surgical result

*Symbols: + = yes, – = no, ? = unknown.

was to review all relevant cases of self-inflicted amputation reported in the psychiatric literature in the last 30 years.

Results

Although examples of self-inflicted mutilations abound in the literature, only 11 cases of upper-extremity amputation have been documented since 1966. These cases, as well as the 2 cases presented above, are summarized in Tables 1 and 2. A case in which fingers alone were amputated is included because of the surgical and psychiatric similarities that this presentation shares with most of the other cases.

The most common distinguishing feature is the presence of psychosis leading to the self-mutilative act. Additionally, men make up the majority of the reported cases, with only 2 women mentioned in the literature. Beyond these similarities, however, there are a number of interesting differences. First, although the trauma of self-amputation may be life-threatening, only 3 of the patients acknowledged suicidal ideation at the time of the self-mutilation. Also, although 4 patients had past psychiatric histories (cases 7, 10, 11, and 12), 7 cases describe a first psychotic break (cases 3, 4, 5, 6, 8, 9, and 13). The rest of the cases fail to document whether the patients had a history of past psychiatric illness. The diagnoses also vary; 6

patients were diagnosed with schizophrenia, 5 with psychotic depression, and 2 with possible bipolar disorder. Although many authors mention substance abuse as an important factor in cases of severe self-mutilation,[10–12] only 3 of the cases reviewed mention the possible role of alcohol or drugs. Finally, the patients differed sociologically. Four were laborers (cases 4, 6, 8, and 13), 3 were artists (cases 1, 9, and 11), 2 were housewives (cases 5 and 10), 2 were college students (cases 3 and 12), 1 was an executive (case 7), and 1 was a Sunday school teacher (case 5). If anything, the heterogeneity of the cases suggests a wide spectrum within which self-amputation may occur.

In spite of this heterogeneity, there is a surprising similarity among the delusions that appear to drive the self-amputation. The most common motivations involved concrete religious beliefs and feelings of guilt over perceived transgressions. One gentleman reported his hope that his self-mutilation would help him atone for his sexual feelings toward the family cat (case 8). Another worried that a devil resided in her hand (case 10). A third felt guilty about an extramarital affair (case 5), while a fourth patient cut off his hand for producing inferior paintings (case 1). Religious motivations included concrete interpretations of The New Testament, Matthew 5:30 (KJV): "And if thy right hand offend thee, cut it off, and cast it from thee: for it is profitable for thee that one of thy members should perish, and not that thy whole body should be cast into hell" (cases 3 and 5). Another patient was told by his cult that the laws of karma demanded his left hand (case 9).

The most common instruments for amputation were electric saws and axes. Three patients utilized knives (cases 2, 7, and 10), and 2 more patients used handsaws (cases 3 and 11). Finally, all but 3 of the reported cases describe surgical reattachment of the amputated extremity. The remainder of this article will focus on the psychiatrist's role in the setting of surgical replantation.

DISCUSSION

The Question of Replantation

Patients who cut off 1 or more of their extremities are often ambivalent about or even refuse surgical reattachment.[2,3] One may wonder whether the procedure represents a wise clinical choice, and the psychiatrist is often asked to aid in this decision. The importance of this question is underscored by a number of factors. Replantation is time consuming and costly. Surgery may last from 8 to 14 hours, and the patient is subjected to general anesthesia for substantially longer than if the stump were simply treated for bleeding and infection. In addition, the decision to replant must be made quickly, as the amputated limb has a finite viability while detached. These factors substantially complicate the psychiatrist's role.

An understanding of the prognosis facing such patients is helpful when deciding whether to pursue replantation. However, very little has been written on the subject. Indeed, the sparse surgical literature addressing this issue seems divided, with some authors mentioning a past psychiatric history as a contraindication for all instances of replantation, regardless of whether or not the injury was self-inflicted.[13] Other authors have more recently noted that each new case of self-inflicted amputation must be carefully reviewed when a decision is to be made whether replantation is indicated.[14] Among the 11 case reports, it appears that patients who undergo reattachment retain at least some function in the replanted hand and are pleased with the surgical outcome. Although some authors have suggested that surgical rehabilitation of self-amputated extremities is less successful than such surgical procedures in nonpsychiatric patients,[2] others have described more positive surgical results.[1,5] Given the variation in outcome and the scant data available, it is difficult to suggest that such patients have poorer surgical outcomes than those who suffer traumatic amputations.

Psychiatric results after replantation also vary. Some of the case reports are decidedly pessimistic. Two of the patients who underwent replantation eventually committed suicide (cases 2 and 6), and 2 others are described as persistently psychotic in spite of psychiatric treatment (cases 9 and 10). However, most of the patients appeared to have at least partial resolution of psychiatric symptoms following psychiatric interventions, and it is difficult to judge whether their psychiatric course was negatively affected by replantation.

Given the data that exist regarding both surgical and psychiatric outcomes, it is reasonable to proceed with replantation. The psychiatrist's role in presenting data in support of this decision is crucial. In the case of Mr. B, the surgical staff was reluctant to go forward with surgical reattachment. They expressed concern that little was known about the prognosis for such patients, and they cited a case series published in 1974 in which 2 of 4 patients who underwent genital replantation following self-amputation committed suicide.[15] The psychiatrist's assurance that data existed suggesting a much more favorable prognosis was helpful in allowing the surgeons to feel more comfortable with surgical intervention.

Postoperative Management

The postoperative environment may be particularly disorienting and frightening to this patient population. Already psychotic, such patients may find the lack of control that follows surgery extremely unsettling.[3] They may attempt to disrupt the normal postoperative care, and in some instances they may even try to detach the freshly replanted extremity. Rapid treatment with neuroleptics and other sedating agents is often necessary, and at times physical restraints may provide the best protection while

the medications take effect. Additionally, the postoperative period allows the psychiatrist time to conduct a more thorough psychiatric evaluation. As quickly as possible, diagnostic formulation should generate a treatment plan. The sooner the patient's psychiatric state is stabilized, the more likely the patient will participate in the necessary surgical rehabilitation. Thus, early diagnosis and treatment are vital for the long-term prognosis of the reattached limb's usefulness.

Hospital Treatment and Transition to Outpatient Management

The exact psychiatric diagnosis may not be readily apparent. Patients may appear substantially more organized following initial neuroleptic treatment, and this apparent lack of psychosis may challenge the working formulation. Both Mr. A and Mr. B appeared markedly calmer and less psychotic after reaching the surgical floor. However, this apparent resolution of symptoms is consistent with the case reports detailing other acts of psychotically driven severe self-mutilation,[16] and such patients must be watched closely. Psychological testing may prove useful in these situations. Three of the reported cases made use of psychological testing (cases 3, 6, and 8), and psychological testing for the 2 patients presented in this article made clear the indication for aggressive antipsychotic treatment.

Transfer to a psychiatric inpatient service should occur as soon as the patient is surgically stable. At this point, care should continue to emphasize both surgical and psychiatric recovery. The importance of surgical rehabilitation in spite of potentially ongoing psychosis poses some difficult challenges for the treatment team. An authoritarian approach may be helpful, forcing the patient as much as possible to participate in the prescribed exercises.[3]

Psychodynamic therapies are also important to inpatient treatment. Individual and family therapy are mentioned in many of the case reports, and articles detailing treatment for genital replantation following self-amputation suggest supportive rather than insight-oriented therapy.[17] The patient's family and friends may also require support and education before the patient is discharged. Every effort must be made for a smooth transition to the outpatient setting.

Outpatient management should include continued psychopharmacologic treatment as well as supportive psychotherapy. Surgical rehabilitation remains extremely important. Cooperation among all of the patient's caregivers can help to encourage use of the reattached hand, leading to increased function.[3] In addition, close observation for signs of destabilization may prevent the potentially drastic effects of psychotic relapse. A number of authors have attempted to establish predictors for psychotically driven severe self-mutilation. Auditory hallucinations, concrete religious preoccupations, a sudden calming of psychotic symptoms, and a pronounced self-imposed change in appearance have all been implicated as warning signs of imminent severe mutilation.[18,19] These predictors might prove useful in the ongoing evaluation of patients who have had a self-amputated limb reattached. Close communication between therapist, psychopharmacologist, the patient, and his or her family is the best way to ensure that subtle signs of decompensation are not missed.

Psychodynamic Understanding

There is an enormous amount of literature addressing the psychodynamic etiologies for severe self-mutilation. However, much of this literature focuses on acts of self-mutilation usually associated with severe personality disorders. Discussions of the dynamic basis for self-amputation of an upper-extremity are decidedly rarer. Menninger reported a case in *Man Against Himself* in which a severely depressed man bludgeoned his son to death to spare "the baby the suffering he himself endured."[20(p238)] The man then amputated his right hand, an act Menninger viewed as a "focal suicide," an inward destruction of an intolerable part of the self. Similarly, in *Bodies Under Siege*,[21] Favazza notes that patients who amputate 1 of their limbs may be attempting to control aggressive and frightening impulses. In this sense, removal of only a part of the body is the patient's attempt to avoid more finite and destructive suicidal impulses.

Favazza also notes the historical and cultural association of human hands with special powers. He mentions numerous examples of these beliefs, including the medieval notion that the detached hand of an executed man was said to possess healing powers, and the practice in ancient Greece of removing a suicide victim's hand before burial, thus preventing the victim's ghost from tormenting the living.[21] Given the mystique that is culturally ascribed to one's hands, it seems plausible that individuals who choose to self-amputate an upper extremity are attempting to rid themselves of a sense of power that has somehow become too frightening. Others have suggested that severe mutilation might reduce guilt and even restore reality testing.[22] The heterogeneity of the reported cases underscores the importance of close attention to the specific meaning that self-amputation as well as replantation holds for each patient.

For example, 1 report[5] describes a right-handed artist who manages to detach his right hand because of his belief that this hand had been producing inferior works of art (case 1). This is in contrast to Mr. A, also a right-handed artist who cut off his left hand, thereby preserving his artistic capacity. The self-mutilation would appear to have differing meaning for each of these patients, and attention to these differences might lead the psychiatrist to a better understanding of both treatment and future risk.

The Reaction of the Treatment Team

The very presence of a patient who deliberately amputates a body part can be immensely disturbing to the treatment team.[3,4] Both surgical and psychiatric staff may view such individuals with fear and revulsion. Staff may worry that a patient capable of such violent self-mutilation may unexpectedly lash out at others.[3] Alternatively, the strange and drastic nature of self-amputation may lead to difficulties in empathic treatment and perhaps even an eventual sense of hopelessness in caregivers.[17] Certainly, the surgeon who has devoted his or her life to repairing injured limbs may have strong feelings associated with the treatment of individuals who deliberately mutilate their extremities.[3,4] In the case of Mr. A, the surgical service expressed strong reservations with regard to surgical replantation. Later, when Mr. A attempted to detach his replanted limb, the surgeons felt bewildered and angry. One surgeon wanted to know why Mr. A apparently failed to understand that those caring for him were attempting to help him. The psychiatrist is thus in an ideal position to help the treatment team with these difficult issues.

One might utilize a large teaching conference, in which the psychiatrist makes use of the existing literature to remind the staff that the patient's prognosis is not necessarily dire. This format has been useful in instances of genital replantation following self-amputation.[17] Additionally, in cases of genital amputation, staff have felt more comfortable with replantation when they are reminded that the fact that the patient did not discard the amputated body part suggests at least a possible desire for reattachment.[17] This argument could be extended to the treatment of patients who have amputated upper extremities. Finally, psychiatric supervision is useful in helping the treating psychiatrist to avoid understandable resistance in the care of such patients.[1]

CONCLUSION

As replantation becomes more common, the psychiatric implications of surgical reattachment for those who self-amputate a body part are of increasing importance. Ideally, more cases need to be described in order to better characterize prognosis and treatment. It seems clear that such patients represent special challenges for the entire treatment team, making a multidisciplinary approach essential. In this setting, the psychiatrist has many roles. In addition to assisting with diagnosis and treatment, the psychiatrist can be extremely useful in supporting the rest of the patient's caregivers through a frightening and provocative experience. Ultimately, such work will allow for the best possible outcome.

Drug names: fluoxetine (Prozac), haloperidol (Haldol and others), lorazepam (Ativan and others), paroxetine (Paxil), risperidone (Risperdal), succinylcholine (Anectine and others).

REFERENCES

1. Demuth GW, Strain JJ, Lombard-Maher A. Self-amputation and restitution. Gen Hosp Psychiatry 1983;5:25–29
2. Stewart DE, Lowrey MR. Replantation surgery following self-inflicted amputation. Can J Psychiatry 1980;25:143–150
3. Strain JJ, DeMuth GW. Care of the psychotic self-amputee undergoing replantation. Ann Surg 1983;197:210–214
4. Goldwyn RM. Comment. Gen Hosp Psychiatry 1983;5:29–30
5. Goldwyn RM, Cahill JL, Grunebaum HU. Self inflicted injury to the wrist. Plast Reconstr Surg 1967;39:583–589
6. Jaffe S, Earle AS, Fleegler EJ, et al. Replantation of amputated extremities: report of 5 cases. Ohio State Med J 1975;71:381–387
7. Goldenberg E, Sata LS. Religious delusions and self-amputation. Curr Concepts Psychiatry 1978;10:2–5
8. Hall DC, Lawson BZ, Wilson LG. Command hallucinations and self-amputation of the penis and hand during a first psychotic break. J Clin Psychiatry 1981;42:322–324
9. Schweitzer I. Genital self-amputation and the Klingsor syndrome. Aust N Z J Psychiatry 1990;24:566–569
10. Clark RA. Self mutilation accompanying religious delusions: a case report and review. J Clin Psychiatry 1981;42:243–245
11. Rosen DH, Hoffmann AM. Focal suicide: self enucleation by two young psychotic individuals. Am J Psychiatry 1972;128:1009–1012
12. Westermeyer J, Serposs A. A third case of self-enucleation. Am J Psychiatry 1972;129:484
13. Gold AH, Lee GW. Upper extremity replantation: current concepts and patient selection. J Trauma 1981;21:551–557
14. Ahmadi A, Hirschberg E. Indications for replantation in psychiatric patients exemplified by hand replantation in a patient with schizophrenia. Handchir Mikrochir Plast Chir 1990;22:46–48
15. Engelman ER, Polito G, Ferley J, et al. Traumatic amputation of the penis. J Urol 1974;112:774–778
16. McLean G, Robertson MB. Self-enucleation and psychosis: report of two cases and discussion. Arch Gen Psychiatry 1976;22:242–249
17. Greilsheimer H, Groves JE. Male genital self mutilation. Arch Gen Psychiatry 1979;36:441–446
18. Shore D, Anderson DJ, Cutler NR. Prediction of self-mutilation in hospitalized schizophrenics. Am J Psychiatry 1978;135:1406–1407
19. Sweeny S, Zamecnik K. Predictors of self-mutilation in patients with schizophrenia. Am J Psychiatry 1981;138:1086–1089
20. Menninger KA. Man Against Himself. New York, NY: Harcourt Brace; 1938
21. Favazza AR. Bodies Under Siege. Baltimore, Md: The Johns Hopkins University Press; 1987
22. Simpson MA. The phenomenology of self-mutilation in a general hospital setting. Can Psychiatr Assoc J 1975;20:429–434