

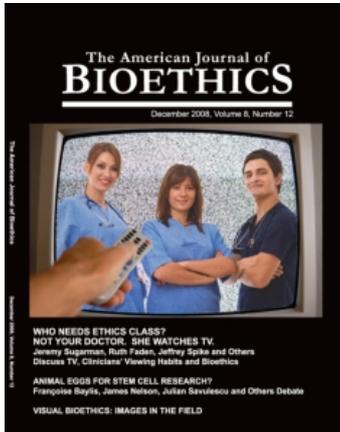
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Body Integrity Identity Disorder (BIID)—Is the Amputation of Healthy Limbs Ethically Justified?

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Target Article

Body Integrity Identity Disorder (BIID)—Is the Amputation of Healthy Limbs Ethically Justified?

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The term body integrity identity disorder (BIID) describes the extremely rare phenomenon of persons who desire the amputation of one or more healthy limbs or who desire a paralysis. Some of these persons mutilate themselves; others ask surgeons for an amputation or for the transection of their spinal cord. Psychologists and physicians explain this phenomenon in quite different ways; but a successful psychotherapeutic or pharmaceutical therapy is not known. Lobbies of persons suffering from BIID explain the desire for amputation in analogy to the desire of transsexuals for surgical sex reassignment. Medical ethicists discuss the controversy about elective amputations of healthy limbs: on the one hand the principle of autonomy is used to deduce the right for body modifications; on the other hand the autonomy of BIID patients is doubted. Neurological results suggest that BIID is a brain disorder producing a disruption of the body image, for which parallels for stroke patients are known. If BIID were a neuropsychological disturbance, which includes missing insight into the illness and a specific lack of autonomy, then amputations would be contraindicated and must be evaluated as bodily injuries of mentally disordered patients. Instead of only curing the symptom, a causal therapy should be developed to integrate the alien limb into the body image.

Keywords: autonomy, body scheme disturbance, body integrity identity disorder, elective amputations

People suffering from body integrity identity disorder report that a particular limb does not belong to them, and that they feel “over complete” and want to have the alien limb amputated. In 1997 Robert Smith, a surgeon in Scotland, fulfilled one of his patient’s deepest desires: he amputated the lower part of the man’s healthy left leg. Smith performed a similar operation on a German retiree two years later, as the British daily news source *The Independent* reported in 2000. Both patients had told Smith that one of their legs was superfluous and that its mere presence had caused them enduring emotional pain. When Smith planned the third amputation of a healthy leg in 1999, the hospital trust’s new chief executive announced a ban on further amputations after a report of the hospital’s ethics committee. The BBC’s “Complete Obsession—Body Dysmorphia” (2000) made the issue public and induced a debate in the medical and medical ethicist community (Beckford-Ball 2000; Dotinga 2000; Dyer 2000; Johnston and Elliott 2002; Munro 2000; Skatssoon 2005; Smith and Fisher 2003).

For such individuals, the wish to cut off a limb is not an idle fantasy but an obsessive need to extricate an alien appendage from their body. Many are distressed by such thoughts, which can disrupt their social life and distract

them at work. The disorder can even be deadly: those who cannot afford or cannot find a willing surgeon may mutilate themselves, for example, by shooting into a leg, sawing off a finger or toe, placing the offensive limb in the way of an oncoming train, or packing the body part in dry ice in an attempt to freeze it to death (Bayne and Levy 2005; Bensler and Paauw 2003; Berger et al. 2005).

EXPLAINING THE AMPUTATION DESIRE

In the medical literature, several cases of the amputation desire have been described (Bensler and Paauw 2003; Berger et al. 2005; Braam et al. 2006; Bruno 1997; Everaerd 1983; First 2004; Money et al. 1977; Skatssoon 2005; Storm and Weiss 2003; Wise and Kalyanam 2000). As bizarre as such attempts may seem, people with BIID are not delusional—which would be an exclusion criterion—but some psychiatrists think that these patients have a monothematic delusion akin to anorexia nervosa or the Capgras syndrome (Skatssoon 2005, 594).

Psychologists, psychiatrists, and neurologists offer quite different explanations for the amputation desire: They discuss whether it is a neurotic disorder, an obsessive-compulsion disorder, an identity disorder like

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1 Koch distinguishes the ‘medical’ and the ‘social difference model of disability’. The first model emphasizes the physical limitations inherent in disability, whereas the latter defines disability primarily as a social condition resulting from society’s failure to accommodate the physical differences of the disabled.

transsexuality, or a neurological conflict between a person's anatomy and body image, which could stem from damage to a part of the brain that constructs the body image in map-like form.

PSYCHOLOGY

Paraphilia—Apotemnophilia

Since the late 1800s, physicians have written about men and women who pretend to be or would like to become disabled. In 1977 the late sex researcher John Money and his colleagues at Johns Hopkins University (Baltimore, MD) described two individuals who wanted to become amputees because they were sexually aroused by this idea. Money defined their condition as *apotemnophilia*, a sexual deviation, or *paraphilia*, in which a stump, pair of crutches, or wheelchair is eroticized. He concluded that people seek amputation to attain sexual fulfillment (Money et al. 1977). Males seem to be more likely affected from BIID as from most paraphilias than females (Braam et al. 2006, 33); especially homosexuals and transsexuals are affected (Berger et al. 2005; Dyer 2000; First 2004; Lawrence 2006; Money et al. 1977). In some cases, BIID could be a compensation for rejected homosexuality; in some cases, the amputation of a limb might prevent the amputation of a transsexual's penis. Amputation desire and amputation fetishism seem to be strongly correlated. This theory is supported by findings of psychiatrist Michael First of Columbia University from 2004, who reports that 87% of 52 people with BIID felt sexually drawn to amputees, and nearly one-third had at least one further paraphilia (transvestism, fetishism, masochism, pedophilia) (First 2004). But sexual urges do not fully explain the disorder.

Factitious Disability Disorder

In 1997, Richard L. Bruno, a specialist in brain-body disorders at the Englewood Hospital and Medical Center in New Jersey, published a classification of apotemnophiles: 1) *wannabes* (*would-be amputees*) whose desire for an amputation was not primarily driven by erotic fantasies but rather by disability itself; 2) *pretenders* who simulate physical disability, for example, by wrapping bandages around a limb and using a wheelchair or crutches; 3) *devotees* who are sexually attracted to amputees and are thrilled by the idea of being an amputee. Wannabes and pretenders, Bruno (1997) argues, are looking for recognition and sympathy more than sexual gratification. He theorized that many of the afflicted lacked attention and love in childhood—when the disorder typically originates—and are looking to get these emotional supports through disability and dependency on others. In support of this theory, Bruno found that some pretenders came from households they described as cold, rigid, and asexual. Many reported that, as children, they felt jealous of the attention received by people in wheelchairs and fantasizing, sometimes obsessively, about being cared for while disabled. According to Bruno, apotemnophilia is a *factitious disorder* (American Psychiatric Association [APA]

2000, 300.19), i.e. a psychological disease, in which a disability is seen as a way to gain attention that was lacked in childhood.

In my opinion, the psychological explanations of the desire for amputation are not convincing because it is too specific, too irrational, and less capable of being influenced to be explained alone by a lack of love in childhood.

PSYCHIATRY

Body Dysmorphic Disorder (BDD) and Obsessive-Compulsion Disorder

Arjan Braam et al. (2006) theorize that apotemnophilia is a combination of an obsessive-compulsion disorder, a body dysmorphic disorder, and an identity disorder (Braam et al. 2006). Persons suffering from body dysmorphic disorder (BDD) show a preoccupation with an imagined or slight defect in appearance and marked impairment in social areas of functioning resulting from the appearance preoccupation; occasionally it is held with delusional intensity. BDD frequently occurs with other psychiatric disorders; the most typical comorbid diagnoses are mood and anxiety disorders, obsessive-compulsive disorders, substance use disorders, eating disorders, and personality disorders. Cosmetic medical treatments typically produce no change or, even worse, an exacerbation of body dysmorphic disorder symptoms (Crerand et al. 2006; Dyl et al. 2006).

There are two important differences between BDD and BIID patients: first, the latter in general do not think that the limb which they want to get rid of is ugly (Baynes and Levy 2005, 78); second, they are not interested in becoming handsome but in becoming disabled in order to become more authentic (Bridy 2004, 152).

Identity Disorder

Michael First (2004) characterizes the disorder less as a desire for disability than as an identity disorder. In his survey, almost two-thirds of the subjects said they wanted an amputation primarily to establish their "true identity" (First 2004, 4). For instance, one subject said, "I felt like I was in the wrong body—that I am only complete with both my arm and leg off on the right side" (4). First likens BIID to gender identity disorder (GID), in which patients are similarly uncomfortable with part of their anatomy because it is at odds with their internal sense of self. Both BIID and GID typically originate in childhood, are often expressed by the imitation of the desired identity (pretending or transvestism), induce a paraphiliac sexual arousal, and are sometimes successfully resolved with surgery. In fact many of the people who utter the desire for the amputation of a healthy limb are man-to-woman-transsexuals (Berger et al. 2005; Braam et al. 2006; Dyer 2000; First 2004; Money et al. 1977). Such similarities suggest, according to First (2004) that BIID is an identity disorder and should be classified as such in the *Diagnostic and Statistical Manual of Mental Disorders (DSM)*. Furth and Smith (2000) have translated the definition of GID (APA 2000, 302.85) 1:1 into the definition of body (integrity)

identity disorder—they just have replaced “male” by “able-bodied” and “female” by “disabled” (87 f.). BIID support groups use the neologism *transabled* in analogy of the successful term *transgender* and explain the desire for amputation in analogy to the desire of transsexuals for surgical sex reassignment (*Amputee Web Site* 2003; *Body Integrity Identity Disorder* 2008; *Transabled.org* 2008).

Nevertheless, the definition of BIID as an identity disorder in analogy to the gender identity disorder is only a descriptive classification but no explanation. Emphasizing the identity component may suggest a causal explanation, although it is proven neither psychologically nor biologically (Braam et al. 2006, 36). The same applies for the gender identity disorder.

NEUROLOGY

Such an identity disorder most likely has a neurological basis. Fisher and Smith (2000) and Furth and Smith (2000), the leading exponents of the identity disorder thesis, suppose a neurological disorder when they explain the amputation desire as the mirror picture of phantom limbs. Some researchers theorize that BIID results from a distortion or deletion in one of the map-like representations of the body in the cerebral cortex (the so called *homunculus*). The body image is a consciously accessible representation of the general shape and structure of one’s body. It is derived from several sources, including visual, proprioceptive, and tactile experience. The body image structures one’s bodily sensations, and forms the basis of one’s beliefs about oneself (Bayne and Levy 2005, 76). An injury or aberration in one particular spot in the map would effectuate a specific amputation desire in a precise location, e.g. of the left leg above the knee. Peripheral or central bugs can disturb the body image (Sacks 1984; Lurija 1993).

Peripheral Disturbances

In some instances, BIID might result from a peripheral injury. In 1974 neurologist Oliver Sacks severely injured his left thigh in an encounter with a bull in the mountains of Norway. After the wound healed, he felt no connection to his thigh and occasionally wished to have the leg amputated. Amputation, he wrote in *A Leg to Stand On*, would “relieve me of having to drag around a totally useless, functionless, and indeed ‘defunct’ limb” (Sacks 1984, Chapter 2). Sacks theorized that such bodily harm might in some circumstances interrupt communication between the limb and the brain.

Some BIID patients similarly recall childhood injuries involving the limb that they shortly thereafter became obsessed with amputating. In approximately one-fifth of the subjects in First’s 2004 study, a disability such as a limp or broken leg provided the impetus for their amputation desire (see also Bensler et al. 2003; Bruno 1997, case 2; Money et al. 1977, cases 1 and 2). Some persons who believed that a disability would provide them with love and attention may have induced a manifest disturbance of their body image by regularly wrapping bandages around a limb.

During World War II, Leontjew and Zaporozec (1960) have already described a syndrome which they called an “inner amputation”—they noticed that approximately 200 soldiers with injured and surgically rebuilt hands perceived their hands as alien or cloned. Sacks (1984) diagnosed sensations of strangeness or of sudden vanishing of limbs in hundreds of patients whose limbs had been fixed for a longer period of time as well as in approximately 50 patients with severe peripheral neuropathies or medulla injuries. The alienation of limbs seems to be complementary to the phenomenon of phantom limbs: Whereas, in the first case, the limb is existent, although the patient lacks the awareness for it, in the second case, the patient is aware of a limb that is missing. The body image is not static and ‘hard-wired’, but continuously modified in dependence on the usage of the parts of the body. When a limb has been paralyzed, has lost its innervation, or amputated, its corresponding part of the body image will be ‘erased’, and its former place will be occupied by its neighbors (Sacks 1984; Lurija 1993; Merzenich et al. 1984). Sensory systems that have been removed from the body image can only be reintegrated when they are used. An appropriate aid for this is music that can trigger movements of limbs that have lost their innervation (Sacks 1984).

Congenital Mismatch Between the Physical Body and the Body Image

Some cases of BIID could stem from congenital aberrations in neural pathways, with injuries or other environmental factors playing a secondary role. Smith and Fisher (2003) theorize that in BIID patients a physical limb has developed without the sensory consciousness for it, i.e. that there could be a congenital mismatch between the physical body and the body image generated in the somatosensory cortex.

Pötzl Syndrome

Body-image distortions are known to result from tumors or strokes in the parietal lobe, which contains the body image that is derived from sensory inputs. Patients suffering from Pötzl syndrome suddenly ignore (parts of) their body’s left half or perceive them as alien, unreal, or even as part of another person’s body. Otto Pötzl has described grotesque cases, e.g., a patient who asked the nurse to take along not only the tray but also his leg, and a patient on a train journey, who demanded his neighbor to take away his hand from his leg and thereby pointed at his own hand. Sacks (1984) described a young man who woke up to discover that someone else’s leg was in bed with him; the man assumed it stemmed from a corpse. In an attempt to throw it out of the bed, he himself landed on the floor. The leg was attached to him, but it seemed to be a counterfeit of his own, which mysteriously had vanished. Physicians discovered a tumor above the patient’s right parietal lobe that had begun to bleed during the night. Sacks posited that the tumor was corrupting the patient’s body map in the brain, and that the bleeding had “erased the leg centre”. After tumor resection the leg “came back”.

Alien Hand Syndrome

In my opinion, the alien hand syndrome—for which only 50 cases have been documented to date—bears a striking similarity to BIID (Biran and Chatterjee 2004; Pappalardo et al. 2004; Scepkowski and Cronin-Golomb 2003). This syndrome sometimes appears after strokes, bleedings, or tumors in the corpus callosum or in the medial frontal cortex. The patients perceive their left hand as alien and often cannot identify it as their own hand. Sometimes an alien hand becomes anarchic and acts against the intentions of the patients; in some cases, it needs to be fixed to the body. Kurt Goldstein has described a stroke patient whose hand grasped her own neck so tight that two men had to tear it off in order to save the patient's life (Pappalardo et al. 2004, 176). Neuropsychological rehabilitation can support the healing process of the alien hand syndrome (Pappalardo et al. 2004).

Dysfunction of the Right Parietal Lobe

Likening BIID to such cases of somatoparaphrenia after a stroke in the right parietal lobe, in which patients deny that a part of their body is theirs, neuroscientists Vilayanur Ramachandran and Paul McGeoch (2007) of the University of California, San Diego, suggested that parts of the parietal lobe might also be damaged in BIID patients. Such damage could presumably decouple a specific part of the body from the body map in that lobe. Patients with *somatoparaphrenia* are convinced that one of their limbs (mostly the left arm) belongs to someone else. Ramachandran's and McGeoch's thesis is based on the left-sided preponderance for the desired amputation, on the emotional rejection of the affected limb, and on the specificity of the desired amputation. Ramachandran and McGeoch suppose that this disorder is effectuated by an uncoupling of the construct of one's body image in the right parietal lobe from how one's body physically is. Their hypothesis would be amenable to testing by response to cold-water vestibular caloric stimulation, which is known to temporarily treat somatoparaphrenia. They now want to test it on people with BIID. Additionally they propose functional magnetic resonance imaging (fMRI) and skin conduction investigations of BIID patients (Ramachandran and McGeoch 2007).

In contrast to patients with the Pötzl syndrome or the alien hand syndrome, most BIID patients suffer since childhood from the sensation of an alien limb. This finding would suggest a congenital malformation in the brain (e.g., a blood vessel anomaly), an early brain trauma (e.g., shaken baby syndrome) or an incomplete development of nerves in the somatosensory cortex or in the corpus callosum. Because of the early onset of the disturbance of the body image, BIID patients cannot remember a life in which the affected limb was integrated into the body image. In contrast to stroke or brain tumor patients suffering from a body image disturbance, BIID patients do not suffer a loss of a limb, but perceive this limb as mere ballast. This difference may explain why one and the same symptom is perceived as a disturbance by stroke or brain tumor patients, but as a part of

their identity by BIID patients. This difference is comparable with the difference between persons with late-onset deafness and congenital deafness. From the latter group, many regard deafness as a part of their identity, not as a disability. In BIID patients, the identity disturbance therefore could be effectuated by an early-onset body image disturbance.

THERAPIES

The consequence of the controversy about the causes of BIID is a controversy about its therapy. Traditional psychotherapy has so far had little effect on the desire for amputation (Bayne and Levy 2005, 83; Bensler and Paauw 2003; Braam et al. 2006, 36; First 2004, 8; Storm and Weiss 2003). Antidepressants, such as selective serotonin reuptake inhibitor (SSRI), and behavioral therapy could sometimes soften the compulsory thoughts, but not suppress them (Braam et al. 2006; Wise and Kalyanam 2000).

Sacks (1984) helped many of his patients with movement therapy, eventually supported by music. Such therapy is thought to reintegrate the estranged body part with its representation in the brain. Such simple cures may work to reinvigorate atrophied neural connections between body and brain, but they may not be effective, if the foreign part of the body has actually been deleted from the brain's body map.

The method proposed by Ramachandran and McGeoch (2007)—rinsing an ear canal with warm and then cold water to stimulate the parietal lobe opposite the treated ear—temporarily alleviated somatoparaphrenia in stroke patients and possibly could alleviate BIID.

If the method helps such patients, physicians might try repetitive magnetic stimulation (rTMS), which can improve the tactile discrimination performance and enlarge the corresponding cortical somatosensory maps (Tegenthoff et al. 2005). Another possibility might be the implantation of stimulation electrodes into the affected brain area. If a benign brain tumor or an arteriovascular malformation is the cause of BIID, microsurgery or radiosurgery might be efficient therapies.

The most drastic measure, amputation, has apparently helped in some cases. But there is reason for hope that scientific advances will lead to ways of correcting the underlying neurological problem, quenching the thirst for amputation before it leads to disability.

ETHICAL DISCUSSION ABOUT ELECTIVE AMPUTATIONS

Ethicists disagree on whether surgeons should grant the wishes for amputation under any circumstances. The medical ethicists Tim Bayne, University of Oxford (UK), and Neil Levy, University of Melbourne (Australia), deduce that: "If the desire for amputation is long-standing, the patient is not psychotic, and he is well aware of the risks and consequences, surgery is ethically permissible because it will prevent many BIID patients from injuring or killing themselves" (Bayne and Levy 2005, 79)

The philosophers Annemarie Bridy (2004) and Floris Tomasini (2006) share this point of view, but Tomasini's argumentation is based exclusively on the BBC report (2000), and the book of the surgeon Robert Smith, and the BIID sufferer Gregg Furth (2000). In contrast the medical ethicists and philosophers Arthur Caplan, Josephine Johnston, Carl Elliott as well as some physicians and politicians argue vehemently against elective amputations (Bensler and Paauw 2003; Dotinga 2000; Johnston and Elliott 2002).

In the following I will discuss the 'pros and cons' of elective amputations with regard to the broadly accepted principles of medical ethics of Tom L. Beauchamp and James F. Childress (2001): respect for the patient's autonomy, non-maleficence, beneficence, and justice.

Respect for Patient's Autonomy

Human beings act autonomously when they act: 1) with intention, 2) with insight into the situation and 3) without external controlling or coercive influences. The principle of autonomy emphasizes the independence of individuals against (medical) authorities. It demands from the physicians to respect the autonomy of the patients and to bring it forward.

Not only many BIID sufferers but also the medical ethicists Bayne and Levy (2005) deduce from the principle of respect for the patient's autonomy that elective amputations are ethically permissible if the patient is not psychotic and well-informed. Bridy (2004) and Tomasini (2006) advocate the right of autonomous decision about body modifications. But generally, the obligations to respect autonomy do not extend to persons who cannot act in a sufficiently autonomous manner because they are immature, incapacitated, ignorant, coerced, or exploited (Beauchamp and Childress 2001, 65). Examples of patients with substantial lacks of autonomy are mentally sick, delusional, and drug-dependent persons. Beauchamp and Childress argue that in such cases the principle of respect for autonomy cannot be applied because no substantial autonomy exists (Beauchamp and Childress 2001, 183). Therefore the principles of beneficence and non-maleficence have to be adopted (Beauchamp and Childress 2001, 65, 70–77, 176–194). To fulfill the desire for a bodily harm of a patient with a substantial lack of autonomy is a severe violation of the medical fiduciary duty and of the principle of nonmaleficence. An example is a stomach stapling operation in an anorexic patient. In individual cases, the diagnosis of a psychiatric disorder and of a loss of autonomy may be controversial, but it has to be made by psychiatrists, not by surgeons. In all cases of BIID that have been investigated by psychiatrists, the diagnosis states that the amputation desire is obsessive or results from a monothe-matic delusion, comparable to anorexia, Capgras syndrome or anankastic counting. Therefore a surgeon must not rely on the patient's 'autonomous decision.'

Not only in the psychiatric field, but also in terms of analytical philosophy, BIID needs to be differentiated between free decisions and obsessive desires. Peter Bieri (2001) defines—in Kant's tradition—that the freedom of will is

given only if the will is determined by the own rational judgment: for example, "I could wish something else if I would judge in a different way!". My will is free when I have the power to wish what I regard as good. The free will is—according to Bieri (2001)—the approved will. The will is unfree, when it affronts its own judgment: for example, "I cannot want something else, although my judgment advises something else!". Examples of an unfree will are drivenness, hypnosis, brainwashing, conformism, obedience, lack of self-control, obsession, and addiction. For the differentiation between a free and an unfree will Harry Frankfurt's concept of higher-order volitions is useful: *first-order volitions* refer directly to certain objects or conditions; *second-order volitions* refer to first-order volitions; for example, a smoker's desire to smoke is a first-order volition; if the smoker wants to give up smoking, the desire not to smoke is a second-order volition. A person is free when first-order volitions are concordant with higher-order volitions (Frankfurt 1971). Accordingly, in BIID patients, the amputation desire is a first-order volition; the wish to have no amputation desire is a second-order volition. The latter could be fulfilled in principle in two different ways: first by amputation, second by eliminating the amputation desire. If the patient believes that only an amputation could eliminate the amputation desire, his first-order volition is stabilized by his second-order volition, and he must try to get an amputation. But if he believes that his amputation desire could vanish without an amputation, the second-order volition will produce an inner resistance against his first-order volition, and the patient may search for a treatment of the amputation desire (like a smoker who uses nicotine patches). Furthermore, the amputation desire is conflicting with other desires, especially those for health, painlessness, mobility, and social acceptance, which BIID patients also have in general.

According to the principle of autonomy, patients have the right to choose between different medical therapy options regarding their different chances and risks as well as their personal situation and individual values. If amputations would be an accredited BIID therapy, patients would have the right to choose between psychological therapy, psychopharmacologic therapy, neurorehabilitation, amputation and possibly transcranial magnetic stimulation or electrical brain stimulation. But whether amputation is a medically accredited therapy for BIID is not an issue of patients' autonomy. Patients do not have a demand to receive therapies by physicians that contradict medical principles (Beauchamp and Childress 2001, 191). Whereas Bayne and Levy (2005) as well as Smith and Fisher (2003) and Furth and Smith (2000) propagate the amputation as a medical therapy for a psychiatric disorder—as a sort of psychotherapy via scalpel—Bridy (2004) argues for the right of arbitrary decisions about body modifications amputations without any psychological indication. She speaks out for the right to design one's own body and puts elective amputations into a continuum of nose corrections and breast enlargements. Like those surgeries, amputations should be accepted as legitimate means in the search for happiness and authenticity. Cosmetic surgery patients aspired to beauty

as an end in itself, apotemnophiles analogously aspired to disability (Bridy 2004, 152). Bridy uses the obsolete term *apotemnophile* (amputation lovers) of Money et al. (1977), which describes the amputation desire as a paraphilia. Bridy (2004) rejects the hypothesis that this desire is irrational because it purposes a “disability”; for that, she refers to the social difference model of disability (Koch 2001).¹ In contrast, Thomas Schramme who pleads for a maximum right of body-modifications wants to exclude BIID patients from this right (2007, 9).

With regard to autonomy, three groups of amputation seekers have to be differentiated: first, BIID patients who suffer from the alienation of a limb because of a neuropsychological disturbance; second, apotemnophiles who desire an amputation because of paraphilia; third, persons who expect financial or social advantages (e.g., insurance rates, retirement, attention) by an amputation. Even if the principle of autonomy should allow for such grave injuries as amputations, in individual cases it has to be investigated whether the patient decides autonomously or whether this decision is determined by a neuropsychological disease. The latter applies to BIID patients, according to the recent research, but not to persons who are sexually aroused by amputations or who hope for financial or social benefits by an amputation.

Nonmaleficence

According to the principle of *nonmaleficence* physicians must not perform amputations without a medical indication because amputations bear great risks and often have severe consequences besides the disability (Beckford-Ball 2000; Dotinga 2000; Johnston and Elliott 2002), for example, infections, thromboses, paralyses, necrosis, or phantom pain (*Amputation Gliedmaßen*, www.chirurgie-portal.de/orthopaedie/arm-bein-amputation.html, accessed December 5, 2008). Even though some physicians perform harmful surgeries as breast enlargement surgeries, this cannot justify surgeries that are even more harmful. Even if amputations would be a possible therapy for BIID, they would be risky experimental therapies that could be justified only if they promised lifesaving or the cure of severe diseases and if an alternative therapy would not be available. At least the first condition is not fulfilled in the case of BIID, and probably the second is not fulfilled either. Above all, an amputation causes an irreversible damage that could not be healed, even if the patient’s body image would be restored spontaneously or through a new therapy.

Beneficence

Amputations could be justified according to the principle of *beneficence* if their benefit for the patient would override their harm. Therefore the following conditions needed to be fulfilled: 1) effectiveness, 2) sustainability of the effect, and 3) non-existence of a less noxious therapy. Bayne and Levy (2005), First (2004), Fisher and Smith (2000) and Furth and Smith (2000) claim that these conditions are fulfilled. But they cannot present scientific evidence for the effectiveness of amputation as a BIID therapy, and refer to only about approximately 10 cases. Furthermore, these cases are collected

from patients who looked for a contact to researchers and media because they are happy with their amputations. Additionally, the sustainability of the effect can be doubted: in some cases a symptom shift occurred—resulting in the successive mutilation of several limbs (Berger et al. 2005; Skatesoon 2005; Sorene et al. 2006). The fact that psychotherapy and psychotropics are not very effective to cure BIID is shown only by a few case studies, whereas in some cases SSRI and behavioral therapy slowed down the amputation desire (Berger et al. 2005). Especially the conclusion that the only possibility to match the physical body and the body image of BIID patients was amputation is wrong: The alternative of adapting the body to the body image is adapting the body image to the body—for example by movement therapy, rTMS, or electrical stimulation of the brain. Hence the prerequisites that could justify amputations according to the principle of beneficence are either not fulfilled or not proved sufficiently.

Nevertheless the principle of beneficence could justify amputations if they could prevent even worse consequences (Beauchamp and Childress 2001, 115). This argument is supported by the fact that some BIID patients are so obsessed with having a limb amputated that they take matters into their own hands, by crushing a leg under weights or placing the offensive limb in the way of an oncoming train (Dyer 2000; First 2004; Furth and Smith 2000; Skatesoon 2005). Some cases resulted in death (Bayne and Levy 2005, 79). The offer of correctly performed amputations could prevent dangerous self-mutilations. This argument implies that amputations would be inescapable for BIID patients and the only question would be who performs them. In another regard, many people with BIID would not harm themselves but could be drawn to a professional amputation.

Justice

Another argument against elective amputations is a socioeconomic one: because of the high costs for medical treatment, rehabilitation, early retirement, and lost working income which would stress the society, elective amputations should not be allowed. Public financing for elective amputations is ethical permissible only if the amputations are strictly necessary to cure a severe disease, but not when they are performed because of aesthetic, erotic, or financial interests. But since amputations cannot be justified as a medical therapy for BIID, they have to be excluded from public financing with regard to the principle of justice.

Amputations require lifelong follow-up costs. According to Richard Alexander (2003), a specialist in personal injury litigation, the annual median cost for goods and services for the survivor of a below the knee amputation is approximately \$105,000; possibly lost income not yet regarded. A welfare state has to finance these costs, even for a devotee who signs a waiver declaration before the elective amputation.

CONCLUSIONS

BIID probably is a neuropsychological disturbance that includes missing insight into the illness and a specific lack of

autonomy. Instead of curing the symptom for the price of an irreversible bodily damage, a causal therapy should be developed in order to integrate the alien limb into the body image.

The crucial question is whether the amputation desire is an autonomous decision or an obsessive desire. If it would be as free as the desire for a piercing or a breast augmentation (which also may result from social pressure), the right for the deliberate design of the own body would even allow for elective amputation, at least if all follow-up costs would be financed privately. But since all psychiatrists who have investigated BIID patients found that the amputation desire is either obsessive or based on a monothematic delusion, and since neurological studies support the hypothesis of a brain disorder (which is also supported by the most influential advocates of elective amputations), elective amputations have to be regarded as severe bodily injuries of patients with a substantial loss of autonomy. As long as the full potential of the available diagnostic methods (especially fMRI and positron emission tomography investigations) has not been tapped, treatments that effect irreversible damages should not be performed.

Even the argument that an amputation would be the only effective BIID therapy does not hold: First, their success has not been proven scientifically but only anecdotally. Second, at least sometimes the success is not sustainable: some amputated patients develop further amputation desires. Third, less invasive and efficient therapies can be expected, e.g. neuropsychological rehabilitation, transcranial magnetic stimulation, and finally electrical stimulation of the affected brain areas. For the latter, a careful benefit-risk-analysis and a participative decision making with the patient would be necessary.

Finally, the ethical question arises whether an amputation or a certain brain therapy is more problematic. In contrary to the amputation, an appropriate therapy of the brain would be a causal therapy, not only a cure of the symptom. It could not only cure the suffering from an alien limb, but furthermore prevent disability. ■

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