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OUTCOME OF SEX REASSIGNMENT SURGERY FOR TRANSSEXUALS*

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Fifteen years ago the author reviewed the world literature on male transsexualism (Pauly, 1965). Subsequently he summarized the results of sex reassignment surgery for male and female transsexuals (Pauly, 1968), and reviewed the literature on female transsexualism (Pauly, 1974). Very recently, Meyer and Reter (1979) concluded that 'sex reassignment surgery confers no objective advantage in terms of social rehabilitation' as compared with a group of individuals who sought sex reassignment but remained unoperated upon at follow-up. Both groups improved over time and led the Johns Hopkins Gender Identity Clinic to conclude that sex reassignment surgery would no longer be offered there. This report, and other non-surgical, psychotherapeutic approaches to gender dysphoric patients (Barlow *et al.*, 1973; Barlow *et al.*, 1979; Lothstein and Levine, 1980) call into question the justification for sex reassignment surgery. Therefore, it becomes important to update the results of sex reassignment surgery for transsexuals. Data on 283 male to female transsexuals and 83 female to male transsexuals are presented.

The purpose of this paper is to review the outcome of sex reassignment surgery for male and female transsexuals in the last decade. Previous studies have demonstrated generally satisfactory results of sex reassignment for those transsexuals operated upon prior to a decade ago (Pauly, 1965, 1968). Patients' satisfaction with sex reassignment surgery is determined to some extent by the functional capacity of the newly acquired sexual organs. Recent advances in surgical procedures have resulted in better functional and cosmetic results, and it is reasonable to assume that this would be correlated with a more positive response to sex reassignment surgery by more recently operated upon transsexual patients.

Since 1965, when the Gender Identity Program at Johns Hopkins Hospital was initiated, there have emerged in North America some 40 centres which offer evaluation and treatment for gender dysphoric individuals. In recent years the number of patients seeking sex reassignment surgery has increased tremendously, and it has been estimated there are some 3,000-6,000 transsexuals in the U.S., and perhaps ten times that number worldwide. This estimate is in close agreement with published reports on the prevalence and incidence of transsexualism (Walinder, 1967, 1971; Walinder *et al.*, 1979; Pauly, 1968; Hoenig and Kenna, 1974). In the last 15 years there has been a proliferation of information in this field. My review of the literature revealed only 100 references to this topic up to 1965 (Pauly, 1965). Since that time, some 412 articles related to transsexualism, gender identity disorders, or sex reassignment have been retrieved by a MEDLARS search of the literature from 1967 to 1978. Currently there are approximately 50 publications a year on this topic, reflecting increasing medical concern about gender dysphoria, its evaluation and treatment. Since 1969, there have been six International Gender Dysphoria Symposia, and the emergence of the Harry Benjamin International Gender Dysphoria Association which published standards of care for transsexuals in 1979. Thus, a new

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discipline has emerged, dedicated to the understanding of the normative, developmental process of gender identification, as well as to the evaluation and treatment of gender dysphoric patients.

The American Psychiatric Association has recently published its updated version of The Diagnostic and Statistical Manual of Mental Disorders (Spitzer *et al.*, 1980) which now includes a section entitled 'Gender Identity Disorders'. Thus, transsexualism and other gender identity problems of children, adolescents, and adults are formally recognized as a bonafide medical, psychiatric condition, which deserves our recognition and therapeutic attention.

Outcome Studies

Over the last decade, investigators have presented the results of their follow-up evaluations on sex reassigned, transsexual patients. I have selected those studies which have included enough data to make an independent determination of satisfactory as opposed to unsatisfactory outcome. An attempt has been made to reduce the information, given for 283 male to female (M-F) and 83 female to male (F-M) transsexuals who underwent sex reassignment hormone treatment and/or surgery, to satisfactory, unsatisfactory, uncertain or unknown results. The number of suicides is also noted.

TABLE I Male transsexuals response to sex reassignment

Investigators	Place/date	N	Duration of follow-up in years	Treatment	Satisfactory	Unsatisfactory	Uncertain	Unknown	Suicide
Randell	England 1969	29	(b) .3-10	E,C,P,V	21	3	3	0	2
Money Erhardt Jones	Johns Hopkins 1970, 72	17	(a) 2 (b) 0.7-14	E,C,P,V	17	0	0	0	0
Hoenig Kenna Youd	Newfound-land 1971	5	(a) 3.7 (b) 1-10	E,C,P,V(3)	2	0	2	1	0
Hastings	Minnesota 1974	25	(a) 5	E,C,P,V,	8	7	10	0	0
Walinder Thuwe	Sweden 1975	13	(a) 6 (b) 3.5-11	E,C,P,V,	9	1	1	1	1
Hore Nicolle Calnan	England 1975	17	(b) .5-1.5	E,C,P,V	11	2	3	1	0
Bentler	Los Angeles 1976	42	(b) .5-2	E,C,P,V	31	1	10	0	0
Sturup	Denmark 1976	11	(b) 5-19	E,C,P(10),V(7)	8	1	1	0	1
Norberg Laub	Stanford 1977	100	(a) 3	E,C,P,V,	86	8	4	0	2
Sadoughi Jayaram Bush	Chicago 1978	9	(a) .5	E,C,P,V,	9	0	0	0	0
Lothstein	Ohio 1979	15	(a) 1.5 (b) .5-3.5	E,C,P,V	0	0	14	1	0
11		283	a = mean b = range	E = oestrogen C = castration P = penectomy V = vaginoplasty	202 71.4%	23 8.1%	48 17.0%	4 1.4%	6 2.1%

These studies originated from Europe and the U.S. The duration of follow-up varied from less than one year, to as long as 19 years. The treatment included oestrogen therapy, the removal of the genitalia (castration and penectomy), and the surgical construction of a neo-vagina. In addition, other surgical procedures, such as augmentation mammoplasty, rhinoplasty, and thyroid cartilage reduction were reported.

When enough information was presented to make an independent judgment, the author tended to make a lower rating than the one which the original investigator made. One sees that 71.4% of the M-F transsexuals were thought to have a satisfactory result; 8.1% unsatisfactory; 17.0% uncertain; and 2.1% of these sex reassigned M-F committed suicide.

Table 2 compares the results of the present study with previous studies by Pauly (1968) and Benjamin (1967). The results of the present study are similar to the conclusions previously reported: 'A satisfactory outcome, as indicated by improved social and emotional adjustment is ten times more likely than an unsatisfactory result' (Pauly, 1968). Unfortunately, there are some 17% of patients for whom the result is still uncertain, usually involving those who have not been followed for a long enough period of time to make a determination.

TABLE 2 Comparison of male transsexuals response with previous studies

		Outcome %		
	N	Satisfactory	Unsatis-factory	Uncertain
Pauly (1968)	48	42	12	46
Benjamin (1967)	73	85	3	12
Present Study (1980)	283	71.4	8.1	17.0

For F-M transsexuals, there are eight series which have been included in the present study over the last decade. Two from England (Randell, 1969; Hoenig *et al.*, 1972); one from Sweden (Walinder and Thuwe, 1975); and the remaining five from the U.S. This information is summarized in Table 3.

TABLE 3 Female transsexuals response to sex reassignment

Investigators	Place/date	N	Duration of follow-up in years	Treatment	Satisfactory	Unsatisfactory	Uncertain
Randell	England 1969	6	(b) 0.4-10	T,M,P (1)	5	1	0
Money Ehrhardt	Johns Hopkins 1970	7	(a) 4 (b) 0.9-9	T,M,H P (1)	6	1	0
Hoenig Kenna Youd	Newfoundland 1972	3	(a) 3.7 (b) 1.0-10	T,M (2), H (3) Radiation (2)	2	0	1
Arieff	Northwestern 1973	4	(b) 1-5	T,M,H	4	0	0
Laub Fisk	Stanford 1974	24	(b) 0.5-7	T,M,H,P	21	1	2
Walinder Thuwe	Sweden 1975	11	(a) 7.5 (b) 4-16	T,M,H	9	1	1
Lothstein	Ohio 1979	6	(a) 1.9 (b) 0.5-3.5	T,M (3), H,P (6)	0	0	6
Pierce Matarazzo Pauly	Oregon 1979	22	(a) 4.6 (b) 1-9	T,M (14), H (14), P (8)	20	1	1
8		83	a = mean b = range	T = testosterone M = mastectomy H = hysterectomy P = phalloplasty	67 80.7%	5 6.0%	11 13.3%

Duration of follow-up ranged from 0.4-16 years. Sex reassignment treatment was more variable than for the M-F cases. All patients were treated with testosterone and most were given mastectomy and hysterectomy, but only 48% received some form of phalloplasty, and these procedures differed markedly from one another.

Of the patients, 80.7% were judged to have had a satisfactory outcome, 6.0% unsatisfactory, and 13.3% uncertain. There were no reports of suicide in these female to male transsexuals.

TABLE 4 Comparison of female transsexuals response with previous studies

	N	Outcome %		
		Satisfactory	Unsatis-factory	Uncertain
Pauly (1974)	40	95	0	5
Benjamin (1966)	15	93.3	6.7	0
Present Study (1980)	83	80.7	6.0	13.3

In comparing the present study to previously published ones, by Benjamin (1966) and Pauly (1974), we see the outcomes are less satisfactory. The present study is thought to reflect a more accurate appraisal than the former studies. Pauly's review in 1974 simply summarized the opinions of authors reporting a single case or a small series while Benjamin reported on his own series of 15 cases of F-M transsexualism.

The combined number of 366 transsexuals probably represents about 10% of the transsexuals in the U.S. who have undergone sex reassignment surgery. The M-F ratio of 3.4 is probably fairly close to current prevalence figures in the U.S. However, recent data on incidence of transsexualism suggest that the M:F ratio is approaching 1:1 (Pauly, 1974; Walinder *et al.*, 1979). The present data indicates that the outcome is better for F-M than for M-F transsexuals.

Discussion

Present Outcome Study

Numerous authors have commented upon the obvious procedural and methodological difficulties of these kinds of studies (Kubie and Mackie, 1968; Lothstein, 1978; 1979; Tiefer and Zitrin, 1977; Pauly, 1965; 1968; 1974). One study which presented data on 25 published reports of follow-up series, summarized their findings: 'A fair appraisal of reports on outcome is that most authors say the results have been "good overall". There are enthusiastic reports about individual cases. No one reports generally poor results after operation, although tragic failures are occasionally noted' (Tiefer and Zitrin, 1977). The same difficulties are noted in the present study. Frequently, the authors do not give enough specific information to compare one series with another. Variables such as age, secondary diagnosis besides gender dysphoria or transsexualism, duration of follow-up and treatment procedures utilized, vary widely. Finally, the outcome criteria and methods of evaluating follow-up, post-operative adjustment are highly variable. Despite the above problems, the author has attempted to summarize the outcome studies as fairly as possible.

To give one example of this problem, let us compare, in more detail, two of the most recent and most thorough follow-up studies on F-M transsexuals. Pierce *et al.* (1979), reporting on 22 F-M transsexuals, indicated that 20 out of 22 did well, while only one out of 22 regretted the decision and was thought to have an unsatisfactory outcome. One patient had several hospitalizations for manic-depressive psychosis, subsequent to sex reassignment, but the patient and the treating psychiatrist thought that improvement had followed surgery. None of these F-M patients underwent the extensive tube flap, skin-grafting procedures that are used in some other centres. Instead, the surgeons utilized the enlarged clitoris and brought the urethra inferiorly to the tip, and used the minor labial skin to form the inferior surface of the neophallus. Although the new penis is small, it maintains its sensation and functions both sexually and for urination. Most importantly, it does not involve unsightly skin graft sites or multiple surgical procedures. These F-M transsexuals are given a choice as to which surgical procedure best suits their needs. Most of the patients were involved with female lovers with whom they already enjoyed a sexual relationship before reassignment surgery.

By comparison, Lothstein (1979) reports from Case Western Reserve University that all of their patients were satisfied with the surgical results. Two-thirds reported improvement in their sex lives. However, 50% of the female to male patients entertained suicidal ideation. 'Patients who underwent phalloplasty were especially vulnerable post-surgery to dysphoric affect and psychic conflict . . . This is an important finding since many of the previously published reports don't differentiate between patients who receive mastectomies and hysterectomies, and those who received phalloplasty' (Lothstein, 1979). He goes on to report: 'Two patients wished that their penis' were larger and worried whether they could ever satisfy a woman. They were also concerned that their penis' would fall off. Thus, a combination

of factors, including gross physical scarring, an aesthetically unappealing neophallus, an inability to attain erection or ejaculate, and an inability to procreate, created a sense of gender doubt and dysphoria. Despite all this, the operated F-M patients denied being unhappy with the surgical results and insisted that they were satisfied with surgery. The F-M patients showed some improvement on measures of social and psychological functioning. However, this particular type of genital surgery and phalloplasty was certainly not a cure for their gender conflicts. These 6 patients, while only 2 years post-operative, were not rated as satisfactory and it is perhaps generous to evaluate them in the uncertain category' (Lothstein, 1979).

The comparison between these two recent studies underscores some of the problems in this kind of comparative evaluation of follow-up outcomes. Each centre used different surgical procedures. Thus, in the F-M situation we are witnessing a developmental stage in the art of surgery which has largely been overcome in the M-F direction. The operative result and the absence of significant surgical complications are important determinants of post-operative adjustment. It is apparent that the creation of a sexually functioning vagina is easier to achieve surgically than is a sexually functioning penis.

It is as correct to say today, as it was a decade ago, that a positive response to sex reassignment surgery is ten times more likely than an unsatisfactory outcome. It should be underscored however, that these gender dysphoric applicants were evaluated more carefully than those before them. Strict requirements for a trial of cross-gender living for at least one year were met in most cases. Even so, at least 6-8% were thought to have had an unsatisfactory result, and 2% of the male to female patients suicided. Undoubtedly, some of those 13-17% in the uncertain category will also fall into the unsatisfactory group as time goes on.

Comparison with Other Studies

Other outcome studies

What happens to applicants who are refused sex reassignment surgery? One recent report speaks to this issue (Lundström, 1979). Thirty patients who were refused surgery in Sweden were contacted, 25 were male to female and five were female to male applicants. Seventeen cooperated by attending an interview, and 11 of 13 M-F and all four F-M transsexuals continued in their cross-gender identity. Only two male to female candidates subsequently denied a preference for the female role. Both were very young, 17 years old, when they originally sought surgery. One continued to be somewhat confused about his gender identity but regarded himself as a homosexual and had frequent homosexual contacts. Only four out of 17 who were refused surgery felt the refusal was justified, the other 13 (including all of the F-M's) felt they were wronged.

Of the five female to male candidates who were refused, two subsequently obtained surgical reassignment elsewhere, and were doing well. Two still wished for surgery and were living in the male role, and one of them was quite depressed. The remaining female to male candidate committed suicide shortly after the refusal, while two others had made suicide attempts.

Of the 13 male to female applicants who were denied surgery, two obtained surgery elsewhere, two still wished for surgery, three still cross-dressed but had given up the idea of reassignment surgery. The remaining six had given up both their cross-dressing and wish for surgery. Of the six, all but one lived as homosexuals. Of these 13 male to female patients who were refused, eight subsequently made suicide attempts.

These refused gender dysphoric patients may serve as some control for the present review which indicates a 2.1% suicide rate for those M-F candidates who did obtain reassignment surgery. Although there were no reported suicides in the F-M group who underwent reassignment surgery, there is at least one known suicide attempt reported for a post operative female to male transsexual (Herschkowitz and Dickes, 1978) as well as one successful suicide among 55 female to male who underwent reassignment surgery in Benjamin's series (Ihlenfield, 1973). Wollman reported six suicides out of 1000 transsexuals he had seen, four who had committed suicide without having received surgery and two after surgery (Wollman, 1979). Thus, I feel it is *not* justified to conclude that surgery carries a higher risk of suicide or attempted suicide than does refusal.

In any event, Lundström concludes that M-F candidates are 'more heterogeneous from a diagnostic point of view than a female group ... who are easier to diagnose, treat, and handle than the male transsexual'. However, it should be pointed out that none of these F-M transsexuals who underwent sex reassignment surgery obtained phalloplasty. In addition, Lundström suggests that 'we ought to be very cautious with the sex reassignment when the condition is difficult to differentiate from homosexuality, especially so when the patient is young'. Morgan states the problem this way: 'It is becoming apparent that for

both the transsexual candidates and a good number of the physicians working with them, sex-reassignment surgery, as a concept, is more ego syntonic than homosexuality' (Morgan, 1978). Some estimates indicated that perhaps 30-35% of gender dysphoric applicants are self-stigmatized, homophobic homosexuals (Morgan, 1978). The Lundström study supports this estimate (Lundström, 1979). For these patients, an attempt should be made to help them accept their homosexuality through psychotherapy. Morgan (1978) reports some success in a group of 12 such individuals. He urged that we not be misled by the chief complaint of a patient, which quite often in psychiatry is a camouflage for other more deep-seated problems. Morgan reminds us as do other workers in the field (Lothstein and Levine, 1980) that psychotherapy is not necessarily mutually exclusive with other treatment options for gender dysphoric patients.

A recent report from the Johns Hopkins Gender Identity Clinic (Meyer and Reter, 1979) reviewed the characteristics of 50 applicants for sex reassignment. The follow-up results were determined by such indices as job, education, marital, and domiciliary stability. By comparing some 15 operated patients with 35 unoperated patients, they conclude that 'sex reassignment surgery confers no objective advantage in terms of social rehabilitation although it remains subjectively satisfying to those who have rigorously pursued a trial period and who have undergone it' (Meyer and Reter, 1979). Forty percent of the unoperated patients subsequently pursued surgery to completion, leaving only 21 who remained unoperated. Of these, all stated an active interest in sex reassignment without completing the required trial period or pushing on to surgery elsewhere. The fact that this unoperated group showed significant positive change in adjustment is interesting, but hardly justifies the conclusion that surgery is not indicated for any applicants.

Another group of patients deserves our attention, in connection with the present follow-up studies. There are now some five reports of successful outcomes for psychological treatment in individuals who were thought to be transsexuals (Barlow *et al.*, 1973, 1979; Davenport and Harrison, 1977; Dellaert and Kunke, 1969; Kirkpatrick and Friedman, 1976). Lothstein and Levine (1980) summarize the situation well when they conclude that not all gender dysphoric patients are poor candidates for psychotherapy. Some seventy percent of their patients had a successful, non-surgical adaptation to their gender disorders. Although some patients will continue to receive and benefit from surgery, 'our current knowledge does not warrant its prescription as a panacea' (Lothstein and Levine, 1980). Rather than argue about whether any of these gender dysphoric patients treated successfully with psychotherapy were indeed true transsexuals, I feel it best to acknowledge that one should explore all possible alternatives in the mangement of these challenging patients before recommending sex reassignment surgery.

Finally, a number of reports indicate that some patients have regretted their decision for sex reassignment surgery (Baker and Green, 1970; Money and Wolff, 1973; Walinder and Thuwe, 1975; Van Patten and Fawzy, 1976; Childs, 1977). Walinder summarizes this situation well in his review of 100 persons who applied for approval for sex reassignment in Sweden up to 1972. Only five of the 100 regretted their decision and attempted to reverse it (Walinder *et al.*, 1978). The following factors were correlated to a statistically significant degree in those gender dysphoric individuals who regretted their decision: unstable personality, inadequacy of self-support, criminality, inadequate support from the family, inappropriate physical build, and heterosexual experience. These dissatisfied patients were considerably older when they first sought help. Interruption of hormone therapy, once it has started, also correlated with lack of satisfaction and regret by the patient. Thus, we are beginning to identify characteristics in gender dysphoric patients which carry a poor prognosis for sex reassignment. This, together with more optimism regarding psychotherapeutic intervention, allows clinicians to match gender dysphoric patients with the most appropriate treatment modality and thereby be of greatest assistance to their patients.

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