

# FOLLOW-UP STUDY OF TRANSSEXUALS AFTER SEX-REASSIGNMENT SURGERY

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## ABSTRACT

**Introduction:** This is a follow-up study of 45 male and 36 female sex reassigned transsexuals.

**Method:** The subjects were interviewed before and 1 to 8 years following sex reassignment surgery.

**Results:** When first seen the males (mean age 23.8 years) were slightly younger than females (mean age 24.9 years). The males had less education and held lower level jobs. They started their sexual life about 1-2 years earlier, but they cross-dressed 4-7 years later than the females. The follow-up results showed that 35% were married and all of them had no problems adjusting to their new life. The overall results were 56% very good and 44% good. There is no pre-operative variables that can predict good adjustments for female transsexuals. For male transsexuals, earlier age of transsexual manifestation was related to good post-operative adjustments.

**Discussion:** The females were less satisfied with the surgery, but they adjusted well as the males. The results were comparable with those from previous studies.

**Keywords:** adjustment, Chinese, follow-up, transsexualism.

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## INTRODUCTION

This is a follow-up study of Singapore Chinese male and females transsexuals who had undergone sex-reassignment surgery. The first sex change operation was reported by Abraham<sup>(1)</sup>, but the most well publicised was the case of Christine Jorgensen reported by Hamburger et al<sup>(2)</sup>. Since then sex-reassignment surgery and the administration of opposite sex hormones have become the most acceptable and effective treatment for transsexualism. This is supported by Pauly<sup>(3)</sup> who in 1981 estimated that the number of patients seeking sex reassignment surgery has increased to some 30,000 to 60,000 worldwide, but he could only report on five papers on psychological treatment in individuals who were thought to be transsexuals and these may not be true transsexuals. The earlier conclusion by Pauly<sup>(4)</sup> that a satisfactory outcome, as indicated by improved social and emotional adjustment is ten times more likely than an unsatisfactory result, was supported by two later extensive reviews on the subject<sup>(3,5)</sup>. There were many reports on the post-operative follow-up studies of transsexuals eg in his review up to 1979, Pauly<sup>(3)</sup> was able to quote 11 post-operative follow-up studies for male transsexuals and 8 for female transsexuals, but all were from the West: from USA<sup>(6)</sup>, UK<sup>(7)</sup>, Holland<sup>(8)</sup>, Denmark<sup>(9,10)</sup> and Sweden<sup>(11)</sup>. A continual search of the medical literature up to 1992 was unable to find any post-operative follow-up study of Asian or Chinese transsexuals. This is therefore the first report of the such a follow-up on a large number of Chinese transsexuals.

The aims of this study are: (1) to examine the long-term psychosocial adjustments of Chinese male and female transsexuals following sex-reassignment surgery, and (2) to find out whether there are any pre-operative variables like age of onset, age of inception, education, occupation, and psychosexual development that can be used to evaluate transsexuals for sex-reassignment surgery.

## MATERIALS AND METHOD

The subjects were male and female transsexuals who had undergone sex-reassignment surgery at the Department of Obstetrics and Gynaecology, National University of Singapore during the

period 1972 to 1988. During their pre-operative period, the subjects were given a detailed psychosocial assessment by the author. Before they were recommended for sex-reassignment surgery, they must satisfy the following minimal conditions: well-established transsexuals, good physical health, mentally healthy, not mentally retarded, absence of heterosexual tendencies, feeling comfortable with cross-dressing, willing to take opposite sex hormones and living the life of the opposite sex for at least six months.

Most of the transsexuals were seen about 2 to 5 years after their surgery. In the assessment, the transsexuals were asked to describe their life history following surgery, paying special attention to the first postoperative year and the past one year, supplemented by a semi-structured questionnaire, covering the following items: (1) work and income, (2) partner relationship, (3) degree of cross-dressing, (4) sex organ function, (5) satisfaction with surgery, and (6) satisfaction with new sex status. Each of the above items were rated on a 3 point scale (Appendix 1).

### Appendix 1

#### Post-operative adjustment scale

The subjects were asked to state their present situation:

better than before	(good)	= 2 points
same as before	(satisfactory)	= 1 point
worse than before	(poor)	= 0 point

The points were added up to form the post-operative adjustment scale as shown below:

1. Adjustment (income and work)	2	1	0
2. Relationship with partner	2	1	0
3. Appropriate clothes	2	1	0
4. Satisfaction with sexual function	2	1	0
5. Satisfaction with surgery	2	1	0
6. Satisfaction with new sex status	2	1	0

ADJUSTMENT SCORE (RANGE 0 to 12) \_\_\_\_\_

## RESULTS

There were 45 male transsexuals and 36 female transsexuals (Table I). The males were younger than the females. There was no significant differences in their educational levels, but the males had lower occupational status. This was mainly due to the male transsexuals taking up service and entertainment jobs which were graded as semi-skilled or unskilled. They tended to

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take up occupations that were appropriate to the opposite sex. The age of onset of transsexualism was about the same for both sexes (mean age 8.71 years for males and 8.64 years for females), but the males developed faster. They became infatuated with same sex members and had homosexual sexual activities and sex partners earlier, but they cross-dressed at a later age than the females. Essential steps in sex reassignment surgery consisted of augmentation mammoplasty, orchidectomy, penectomy and vaginoplasty for male transsexuals, and reduction mammoplasty, hysterio-salpingo-ovarectomy and phalloplasty for female transsexuals<sup>(12)</sup>.

**Table I – Basic characteristics of transsexuals**

	Male (n = 45)		Female (n = 36)		All Cases (n = 81)		Significance
<b>Age Seen</b>							
14-19	10	22%	2	6%	12	15%	$\chi^2 = 7.1489$ p = NS
20-24	21	47%	15	42%	36	44%	
25-29	8	18%	14	39%	22	27%	
30-36	6	13%	5	14%	11	14%	
Mean Age	22.91 years		25.38 years		24.01 years		t = 2.48
S.D.	4.55 years		4.35 years		4.46 years		p < 0.05
<b>Age Operated</b>							
20-24	26	58%	10	28%	36	44%	$\chi^2 = 7.549$ p < 0.05
25-29	11	24%	17	47%	28	35%	
30-36	8	18%	9	25%	17	21%	
Mean Age	24.71 years		27.39 years		25.90 years		t = 2.89
S.D.	4.28 years		4.00 years		4.14 years		p < 0.01
<b>Education</b>							
0-6 years	8	18%	9	25%	17	21%	$\chi^2 = 0.6294$ p = NS
7-10 years	22	49%	16	44%	38	47%	
11+ years	15	33%	11	31%	26	32%	
Mean	9.53 years		9.25 years		9.41 years		t = 0.45
S.D.	2.26 years		3.42 years		2.83 years		p = NS
<b>Occupation</b>							
Class 2	1	2%	3	8%	4	5%	$\chi^2 = 8.634$ p < 0.05
Class 3	18	40%	19	53%	37	45%	
Class 4 & 5	18	40%	14	39%	32	40%	
Others*	8	18%	0	0%	8	10%	
<b>Year Operated</b>							
1971-80	9	16%	9	25%	16	20%	$\chi^2 = 1.602$ p = NS
1981-84	15	33%	13	36%	28	35%	
1985-88	23	51%	14	39%	37	46%	

Class 2 = semi-professionals  
Class 3 = clerical and skilled  
Class 4 = semi-skilled and unskilled  
Others\* = 6 national servicemen, 2 students  
NS: Not significant

### Post-operative adjustments

All the transsexuals continued to dress appropriately for their newly assigned sex status and most of them (95%) had improved socially and financially. They had more income through career advancement or having found more stable jobs. Some continued their previous entertainment job eg as a lounge hostess. Some female transsexuals gave up their previously better paid jobs because they did not want their past identity to be known in their new working environment. Before sex reassignment surgery, none of the transsexuals were legally married. Post-operatively 14 male transsexuals (32%) were legally married to men and 15 female transsexuals (39%) were legally married to girls, usually

about 3 years after sex reassignment. Many were married and staying with their spouses. The male transsexuals might not marry their previous boyfriends. Some had difficulty finding new marriage partners. They complained that their partners were generally not interested in marriage. Some partners rejected the male transsexuals after they had discovered that they were not biological females. The female transsexuals had less problems. The male and female transsexuals also faced rejection by their prospective mothers-in-law. Some managed to keep their transsexual identity secret from their mothers-in-law after marriage. After they were married, they look forward to adopting children and starting a family. Some female transsexuals also planned to have children through artificial insemination of their female partners. The post-operative transsexuals had a more satisfying sexual life. For the male transsexuals their neovagina was functioning satisfactorily. For the female transsexuals their neophallus was not able to function as a sex organ, but they were still satisfied with it.

Compared with the females, the male transsexuals (91%) were more satisfied with the results of surgery than female transsexuals (39%). This resulted in the female transsexuals having less satisfaction with their new sex organ (Table II). This is understandable because it was not possible to construct a fully functioning male neophallus. All the male transsexuals and 95% of the females were satisfied with their new status. The female transsexuals (81%) adjusted slightly better socially, having a more stable partner relationships than the male transsexuals (67%). The result of the Post-operative Adjustment Scale (score range 0-12) showed that 56% had very good adjustment (scored 9-12 points), 42% had good adjustments (scored 5-8) points, and none had poor adjustment (0-4 points). There were no difference in the mean scores between the male and female transsexuals.

**Table II – Males and females compared**

Good or Satisfactory* Adjustment in:	Male (n = 45)	Female (n = 36)	All (n = 81)	Significance $\chi^2$
Work and finance	96%	94%	95%	0.053 p = NS
Partner relationship	67%	81%	72%	1.950 p = NS
Appropriate clothes	100%	100%	100%	0.000 p = NS
Sexual activity	64%	61%	63%	0.096 p = NS
Sex organ function	91%	39%	68%	25.025 p < 0.001
Sex status satisfaction	82%	81%	81%	0.368 p = NS

\*score of 1 or 2 in the specific items on the Post-operative Adjustment Scale (see Appendix 1)  
NS : not significant

### Predicting good outcome (Table III)

For male transsexuals the only pre-operative variable that could differentiate very good outcome from good outcome was an earlier age of onset of petting activity. For females there were no pre-operative variables that can predict differences in outcome.

**Table III – Pre-operative variables and outcome (males)**

Outcome Age at:	Good Outcome*		Satisfactory*		Significance by student t-test	
	Mean	S.D.	Mean	S.D.		
Onset	10.1	4.2	9.2	5.0	t = 1.36	p = NS
Infatuation	14.1	4.2	13.2	2.7	t = 0.87	p = NS
First partner	18.1	4.9	15.8	3.5	t = 1.16	p = NS
Petting	16.4	4.2	14.0	2.5	t = 2.36	p < 0.05
Cross-dressing	17.9	3.3	15.5	4.7	t = 1.78	p < 0.10

\*Scores ranges from poor 0 to 12 good (see Appendix 1).  
0-3 = poor, 4-8 = satisfactory, 8-12 = good  
None of the cases score below 4 points.  
NS : not significant

## DISCUSSION

A brief review of some follow-up studies would confirm that sex reassignment surgery benefitted most transsexuals if they have undergone a psychiatric evaluation to rule out psychotic process before sex-reassignment. Pauly<sup>(13)</sup> in his review of the first 100 male transsexuals published in the literature, found that out of the 42 who had undergone sex reassignment surgery, 42% were satisfactory, 12% unsatisfactory and 46% were not known. The relatively poor results could be due to some of his cases suffering from psychotic process. Benjamin<sup>(6)</sup>, followed up 51 male transsexuals postoperatively and found that 86% had satisfactory results. Disappointments had to do with the sexual functions. Other follow-up results for male transsexuals are summarised as follows: Randell<sup>(7)</sup>, 29 cases, 83% satisfactory; Block et al<sup>(14)</sup>, 31 cases, 52%, satisfactory, none dissatisfied; Hore et al<sup>(15)</sup>, 16 cases, 69% definitely benefitted, feeling more feminine and having increased confidence emotionally and sexually; Hasting and Markland<sup>(16)</sup>, 25 cases, most were grateful that they were operated; Hunt and Hampson<sup>(17)</sup>, 17 cases, none regretted surgery; Ball<sup>(18)</sup>, good social adjustments for most of the cases with the patients leading active productive lives; Sorensen<sup>(10)</sup>, 23 cases, 83% felt better. For female transsexuals, Randell<sup>(7)</sup>, 6 cases, none poor results; Sorensen<sup>(9)</sup>, 8 cases, 4 satisfied with their economic situation, 2 extremely dissatisfied with the surgical changes. Generally the results of sex reassignment were consistently better in biological females than in biological males<sup>(4,19)</sup>. This also applies to the Chinese transsexuals in this study, except that the males were more satisfied with the surgical results.

Pauly<sup>(3)</sup> summarising the results of 19 studies involving 283 males and 83 females, found that unsuccessful cases were slightly higher in male transsexuals (8.1%) which included 6 suicides (2.1%) compared with female transsexuals (6.0%) which had no suicide. Lundstrom et al<sup>(5)</sup> summarised 3 independent reviews of the world literature and found that 10-15% of the patients who underwent sex reassignment surgery ended up in a failure. There were as many failures in male transsexuals as in female transsexuals. In the 45 male and 36 female postoperative Singapore transsexuals all had a satisfactory outcome: 58% had very good, 42% had good and none had a poor outcome. This confirms that sex reassignment is a satisfactory method of treating transsexualism. It is difficult to compare the results of different studies because of the lack of uniformity in the selection of cases, in the operative procedure and in the method of follow-up evaluation. According to Pauly<sup>(3)</sup>, "a positive response to sex reassignment surgery is ten times more likely than an unsatisfactory outcome, and such results had been confirmed by most studies."

The second objective of the paper, to find out what pre-operative variables could predict good post-operative adjustments. There are not many pre-operative variables that could predict good post-operative outcome. In this study, early onset of petting activity was the only variable that was related to good outcome for male transsexuals. Lundstrom et al<sup>(5)</sup> found that a relatively high age and secondary male transsexualism were risk factors and Pauly<sup>(20)</sup> found that unsatisfactory results occurred in

10-15% many of whom were older patients and secondary transsexuals. Ball<sup>(18)</sup> highlighted the importance of technical excellence of the surgical procedures as well as good preoperative social adjustment which was supported by Pauly<sup>(19)</sup> who found that satisfactory outcome depended on good cosmetic and functional results from surgery especially in male transsexuals. There were no subjects in this series which had a poor outcome. Sorensen<sup>(4)</sup> found the results of surgery, especially for females, were not very satisfactory. Poor results were associated with increasing age at time of request, considerable heterosexual experience, interruption of hormone therapy, unstable personality, inability to support oneself, criminal activity, poor family support, and inability to pass readily as a member of the re-assigned sex, to which can be added poor surgical result. Most of these factors were not present in the 45 male and 36 female transsexuals reported in this paper. From this study, it can be concluded that successful sex-reassignment surgery improves the social and emotional functions of carefully selected transsexuals.

## REFERENCES

1. Abraham F. Genitalumwandlung an zwei maenlichen transvestiten. *Z Sexualwiss* 1931; 18: 223-6.
2. Hamburger C, Sturup CK, Dahl-Iversen E. Transvestism: hormonal, psychiatric and surgical treatment. *JAMA* 1953; 152: 391-6.
3. Pauly JB. Outcome of sex reassignment surgery for transsexuals. *Aust NZ J Psychiatry* 1981; 15: 45-51.
4. Pauly JB. Current status of change of sex operation. *J Nerv Ment Dis* 1968; 147: 460-71.
5. Lundstrom B, Pauly J, Walinder J. Outcome of sex reassignment surgery. *Acta Psychiatr Scand* 1984; 70: 289-94.
6. Benjamin H. The transsexual phenomenon. New York: Julian Press Inc, 1966.
7. Randell J. Pre-operative and postoperative status of male and female transsexuals. In: Green R, Money J, eds. *Transsexualism and sex reassignment*. Baltimore: Johns Hopkins Press, 1969: 355-81.
8. Sturup GK. Male transsexuals. A long-term follow-up after sex reassignment operations. *Acta Psychiatr Scand* 1976; 53: 51-63.
9. Sorensen T. A follow-up study of operated transsexual females. *Acta Psychiatr Scand* 1981; 63: 50-64.
10. Sorensen T. A follow-up study of operated transsexual males. *Acta Psychiatr Scand* 1981; 63: 468-503.
11. Lindemalm G, Korlin D, Uddenberg Y. Long-term follow-up of "sex change" in 13 male-to-female transsexuals. *Arch Sex Behav* 1986; 15: 187-209.
12. Ratnam SS, Goh VHH, Anandakumar C, Tham FF. Sex change surgery. In: Ratnam SS, Goh VHH, Tsui WF, eds. *Cries from within: transsexualism, gender confusion and sex change*. Singapore: Longman 1991: 57-76.
13. Pauly JB. Male psychosexual inversion: transsexualism. *Arch Gen Psychiatry* 1965; 13: 172-81.
14. Block NL, Tessler AN. Transsexualism and surgical procedures. *Surg Gynecol Obstet* 1971; 132: 517-25.
15. Hore BD, Nicolle FV, Calnan JS. Male transsexualism in England: Sixteen cases with surgical intervention. *Arch Sex Behav* 1975; 4: 81-8.
16. Hastings D, Markland C. Post-surgical adjustment of twenty-five transsexuals (male-to-female) in the University of Minnesota study. *Arch Sex Behav* 1978; 7: 327-36.
17. Hunt D, Hampson JL. Follow-up of 17 biologic male transsexuals after sex-reassignment surgery. *Am J Psychiatry* 1980; 137: 432-8.
18. Ball JRB. Thirty years experience with transsexualism. *Aust NZ J Psychiatry* 1981; 15: 39-43.
19. Pauly JB, Edgerton MT. The gender identity movement: a growing surgical-psychiatric liaison. *Arch Sex Behav* 1986; 15: 315-29.
20. Pauly JB. Female transsexualism: Part I. *Arch Sex Behav* 1974; 3: 487-507.