

## FISTULAE OF THE URINARY TRACT IN THE FEMALE

### A PROPOSED CLASSIFICATION\*

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In submitting the proposed classification of urinary-tract fistulae in the female parturient one has, as a result of personal contact with over 300 Native female cases during the past 8 years, been forced to realize that there exists no scientific and authoritative mode of classification of these cases which would offer a basis for a comparative survey of the types of fistulae and the respective cure rates.

It was never understood why one operator could quote a uniform success in all his cases, whilst another grew despondent with a bare 60%, till it was realized that reports by various authors were scientifically not comparable owing to there being no standards of comparison in universal use. Some surgeons were selecting only the simple types (Grade I, type A, etc., q.v.) and so could naturally be expected to produce a 100% cure rate, whereas others who, not selecting their cases but trying to cure all grades and types, were blessed with minor degrees of success.

The variety of fistulae seen in South Africa are comparable to those reported from India, Egypt, China, Asia Minor etc., in that the majority are the result of the lack of proper and adequate obstetrical facilities in the country districts, the poor nutritional status of the patients, and the general lack of personal hygiene.

Fistula statistics from highly civilized and populated areas such as the United Kingdom and Western Europe cannot be compared on the basis of results, as they commonly are of the Grade I type, small and clean, and consequently easily repaired. By far the majority seem to be of the post-operative type, and not obstetrical, since the obstetrical services of these countries are of the highest level.

The classification proposed and submitted has been employed during the years 1949-1956 inclusive for *all* grades and types admitted to hospital, with no selection of cases for operative treatment. The statistics, based on and compiled from the classification, are attached, and show clearly that the vast majority of cases are those referred to hospital after unsuccessful repairs at an earlier date, usually by operators inexperienced in this branch of surgery. It is consequently not surprising that the percentage cure rate is low.

It is common to find that each author has either used his own form of classification based solely on the anatomical structures involved, or the size of the fistula, or even one of convenience. But no two writers seem to have reached any common grounds for agreement other than that a urinary fistula is present. This lack of agreement has prevented comparison between individual workers' material or results, based on a common scientific classification. Such classification needs to be full yet simple, workable in its details so that it will not be cumbersome, to be based on the three principal anatomical structures involved in urinary leakage, and to take into account the clinical aspects of site, size,

accessibility and condition of the tissues involved in attempted repair.

With such a scheme in practice, it is possible to classify the fistulae by grade, by anatomical site, and by type-group according to size, access and condition of tissues. Symbols are used for grade, prefixed with the anatomical site, and followed by an alphabetical sequence for the type-group. Other less common types of fistulae may easily be fitted into this general scheme of the three major forms, as subsidiaries for scientific completeness.

Comparative studies of different authors in different areas will thus become available; the high percentage cures of some will be seen to be the result of the treatment of simple fistulae of Grades I and II, whilst the poor results of others are due to preponderance of Grades IV and V. The scheme will also give some idea of the localities in which the various grades tend to be most frequently found and so afford a guide to the provision of preventive measures by adequate obstetrical care, or efficient treatment. The latter should avoid attempted repairs by unskilled persons, whereby a grade I or II fistula is converted into a grade IV or V and local conditions are made unsuitable for successful repair in the future. This is fully borne out by the statistics quoted below.

With these points in view, the classification here proposed has been used for some time, and has proved workable, simple and comparative. It is self-explanatory and reflects all the salient clinical features, thus permitting of rapid and easy grading under the primary anatomical structures of the urinary tract that are involved, and attempts to put fistulae on a scientific basis of uniformity in classification.

#### Definitions (Table I)

*Grade of fistula* depends on whether normal healthy tissues and sphincters are present, together with easy access. This applies to Grade I only, whilst Grade II is the same with scar tissue in mild degree, and Grade III is a Grade II with more scarring and poor access vaginally.

*Type of fistula* is dependent upon size only except in the sub-group D, where a recto-vaginal fistula RVF is present, as defined.

The aetiology of the fistula is not considered in its classification. It need only be added to the end of the formula as a point of scientific interest: e.g. VVF II B (parturition) or VVF V (Ca Cx, radium, etc.). The main point at issue is the presence of a urinary fistula of a specific grade and type which will allow a scientific comparison of results.

#### Operations

It should be noted that though a fistulous opening is successfully closed by operation, the case is not classified from either the clinical or statistical point of view as a cure unless *she also has complete urinary continence and control*.

Using this classification I should like to present the results of work done on 303 cases during 1949-56 (inclusive) as a basis for argument in favour of the scheme. The relevant statistics are reflected in Tables II, III and IV.

The vast majority of the cases were treated by local repair

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of the fistula together with a combined urethral sphincter plastic when this was possible. In some cases muscle cross-strut slings had to be employed to effect cure of the stress incontinence which remained after closure of the fistula at a previous operation. Cure of the fistula (237 out of 298 operations) was not classified as a successful result unless control of the urinary sphincter mechanism was also present. Hence the fistula cure rate of 79.5% becomes reduced to an absolute cure rate of 65.1% over the 8-year period under review, i.e. 194 cures out of 298 operations.

The operative treatment of the persisting urinary stress incontinence in the 43 cases has been by re-suture of the urethral muscular shelf and fascia and a Kelly suture in most cases, but in others by the formation of a cross-strut muscular sling using the bulbo-cavernosus muscles; slips of levator ani muscles (anterior fibres) and even part of the adductor longus muscles.

The 105 total failures recorded are mainly due to the following factors:

1. The many attempts at repair that had already been made with the chance of success diminishing progressively with each further attempt owing to the increasing amount of scar tissue, the poorer blood supply, and the inevitable loss of the healthy tissue required to close a fistula without tension.

2. The initial grade and type of fistula at the time of admission. The fistulae in Grade III type D and those in Grade V show a marked fall in cure rate. This justifies this classification of such fistulae from the clinical aspect alone; one is able to predict to some extent the possible outcome in these types.

3. Inexperience generally, and this applies more particularly to the operator, the lack of an established pre- and post-operative routine, and the lack of a permanent efficiently trained nursing staff in charge of the cases.

4. Residual urinary sepsis and alkalinity.

In the series there were 4 deaths which occurred post-operatively and 2 which occurred in the pre-operative routine period. Post mortems were held on each case, and the diagnosis of 'myocardial degeneration' was ascribed to each. As a result of these deaths, each case on admission now has an ECG done, and is seen by the physician as regards the cardiovascular system before surgery is attempted. One has wondered if the myocardial degeneration in these cases might have been due to a chronic toxic absorption from the area of the fistula and the related renal tract, for gross infection is always present on admission, and some patients even look toxic. This clinical state rapidly disappears with rest in bed, good food, chemotherapy and urinary anti-septics, so pointing to a possible cause and effect.

In the series there were 108 cases requiring repeat repairs, which varied from 2 to 11 attempts. These cases thus became selected candidates for ureteric transplantations, of which 15 have been carried out with complete relief to the patient. Follow-up pyelogram studies have shown the presence of hydronephrosis and hydro-ureter which in the majority of the cases, is apparently of a progressive type with a raised blood urea.

Only 2 cases were not of obstetrical origin, and these both followed removal of a cervical stump at some other institution. They were successfully repaired by the Latzko technique.

Four cases on admission were inoperable in that 3 were

TABLE I. PROPOSED CLASSIFICATION OF URETHRO-VAGINAL AND VESICO-VAGINAL FISTULAE

Grade	Type	Characters
I	A	Size: less than 1 cm. diam. (finger-tip) Access: easy Tissues: healthy Sphincters: normal
	B	Size: over 1 cm. diam. but less than 2 cm. (admits finger) Access: easy Tissues: healthy Sphincters: normal
	C	Size: over 2 cm. diam. (e.g. sloughed urethra) Access: easy Tissues: healthy Sphincters: normal
	D	Any type above + RVF (recto-vaginal fistula)
II	A	Type 1A + { Access limited (mild vaginal scarring) Tissues: healthy Sphincters: normal
	B	Type 1B + do.
	C	Type 1C + do.
	D	Type 1D + do.
III	A	Type 1A + { Access more limited (severe scarring and stenosis) Tissues: poor Sphincters: involved
	B	Type 1B + do.
	C	Type 1C + do.
	D	Type 1D + do.
IV	A	Any type of any grade requiring a repeat repair + sphincters intact
	B	do. + sphincters involved
V		Inoperable locally <i>per vaginam</i>

Uretero-vaginal fistulae (UrVF) are classified into IA (congenital) and IB (acquired).

the result of cervical carcinoma in an advanced stage and one followed the application of radium to a cervical carcinoma. All 4 cases have since died.

The series included 18 cases of recto-vaginal fistulae complicating urinary fistulae, and these were treated successfully at the combined primary operations. Defunctioning colostomies were often necessary.

#### SUMMARY

1. A series of 298 cases of genito-urinary fistulae in the female are presented as the basis for a proposed scheme of classification of such fistulae.

2. Operative cure is claimed only when cure of the fistula with complete control of urinary function has been achieved. This amounted to 64.6% of all cases (i.e. 194 out of 298 cases operated upon). Based only on the closure of the fistulae the cure rate was 79.5%.

3. There were 2 deaths in the pre-operative period, all

TABLE II. CASES, OPERATIONS AND CURES BY GRADE AND TYPE, 1949-56

Grade	Type	UVF			VVF			UrVF		
		No.	Op.	C.	No.	Op.	C.	No.	Op.	C.
I	A	18	18	18	11	11	8	2	2	2
	B	2	2	2	5	5	5			
	C	2	2	1	6	6	6	1	1	1
	D				1	1	1			
II	A	4	4	2						
	B	9	9	8	7	7	6			
	C	3	2	2	3	3	0			
	D	1	1	1	2	2	1			
III	A	4	4	2	1	1	0			
	B	5	5	3	8	8	6			
	C	5	5	3	22	22	12			
	D	8	8	5	6	6	1			
IV	A	42	42	25	35	35	22			
	B	16	16	10	15	15	12			
V		12	12	5	50	46	24			
		131	130	87	172	168	104	3	3	3

Grand Total—Cases 303, Ops. 298, Cures 194. No.=No. of cases. Op.=No. of operations. C.=Absolute cures.

TABLE III. DETAILED ANNUAL SUMMARY

	1949	1950	1951	1952	1953	1954	1955	1956	Total	%
Cases .. .. .	30	47	35	39	55	38	26	33	303	
Cases operated upon .. .. .	28	47	34	39	54	37	26	33	298	
Absolute cures .. .. .	20	24	24	27	32	27	18	22	194	65.1
Fistulae closed .. .. .	22	29	28	31	37	35	27	28	237	79.5
Stress incontinence remaining .. .. .	2	5	6	8	5	5	7	5	43	
Cured of stress incontinence later .. .. .	2	4	3	4	2	4	2	1	22	86.7
Total failures .. .. .	8	23	10	12	22	10	8	11	105	
Inoperable .. .. .	2	1	1	—	1	—	—	—	5*	
Fistula failures .. .. .	6	10	4	4	10	2	1	6	43	
Total deaths .. .. .	1	—	1	1	—	1	—	2	6	1.3†
Deaths pre-op. . . . .	1	—	1	—	—	—	—	—	2	
Fistulae with RVF .. .. .	3	6	2	1	—	3	2	3	18	
Repeat repairs (2-11 times) .. .. .	6	22	12	14	23	13	10	8	108	
Ureteric transplants .. .. .	1	1	5	2	—	2	1	3	15	8.3

\* Absconded.

† Corrected.

TABLE IV. CASES, OPERATIONS AND CURES ANNUALLY

Year	UVF			VVF			UrVF		
	No.	Op.	C.	No.	Op.	C.	No.	Op.	C.
1949 .. .. .	18	16	10	11	11	9	1	1	1
1950 .. .. .	20	20	7	26	26	16	1	1	1
1951 .. .. .	22	22	16	13	12	8			
1952 .. .. .	25	25	17	14	14	10			
1953 .. .. .	14	14	8	41	40	24			
1954 .. .. .	11	11	11	27	26	16			
1955 .. .. .	18	18	11	8	8	7			
1956 .. .. .	24	24	14	8	8	7	1	1	1
8 years .. .. .	152	150	94	148	145	97	3	3	3

No.=No. of cases. Op.=No. of operations. C.=Absolute cures.

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having the same clinical findings and pathological diagnoses. A suggestion is put forward regarding a possible cause and effect in these cases.

4. The classification has been of value in helping to select the type of repair and in making the prognosis from a clinical

aspect. It would permit of a comparison with results from other centres and authors.

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