

Factors affecting the **success rate** of sperm recovery in **non-obstructive azoospermia** patients undergoing **testicular sperm extraction** – A 26-year retrospective study



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Introduction

- Evaluating the factors affecting the **success rate** of sperm recovery in **non-obstructive azoospermia** (NOA) patients undergoing **testicular sperm extraction** (TESE)

Patients & Methods



Retrospective study

Inclusion criteria

- NOA patients 07/1997- 03/2024
- TESE Queen Mary Hospital

Results

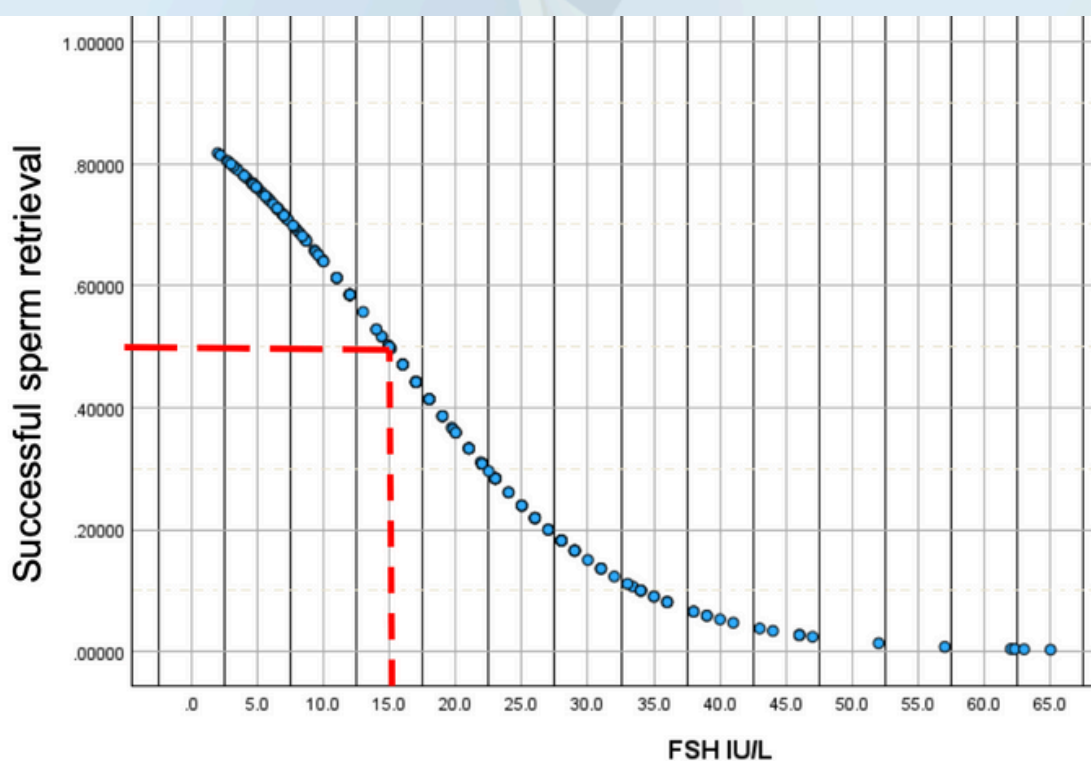
Table 1. Baseline characteristics of patients

	Unsuccessful sperm retrieval (n=136)	Successful sperm retrieval (n=136)	P-value
Age (mean)	36.76 ± 5.81	39.18 ± 5.93	<0.001
Right testis volume (ml)	9.33 ± 4.66	12.57 ± 6.15	<0.001
Left testis volume (ml)	8.89 ± 4.27	12.39 ± 4.68	<0.001
FSH (IU/L)	25.57 ± 14.0	12.1 ± 9.28	<0.001
LH (IU/L)	10.66 ± 6.80	5.88 ± 3.63	<0.001
Testosterone (nmol/L)	10.10 ± 5.92	14.8 ± 14.8	0.018
No. of sites of biopsies	12.02 ± 8.14	7.86 ± 7.01	<0.001

Table 2. Correlations between various factors

		Right testis vol	Left testis vol	Age	FSH	LH	Testosterone
Right testis vol	Pearson	1	0.927	0.075	-0.57	-0.56	0.234
	Sig. (2-tailed)		<0.001	0.238	<0.001	<0.001	0.008
Left testis vol	Pearson	0.927	1	0.083	-0.573	-0.582	0.286
	Sig. (2-tailed)	<0.001		0.192	<0.001	<0.001	<0.001
Age	Pearson	0.075	0.083	1	-0.176	-0.174	0.066
	Sig. (2-tailed)	0.238	0.192		0.015	0.024	0.443
FSH	Pearson	-0.570	-0.573	-0.176	1	0.801	-0.209
	Sig. (2-tailed)	<0.001	<0.001	0.015		<0.001	0.015
LH	Pearson	-0.561	-0.582	-0.174	0.801	1	-0.214
	Sig. (2-tailed)	<0.001	<0.001	0.024	<0.001		0.016
Testosterone	Pearson	0.234	0.286	0.066	-0.209	-0.214	1
	Sig. (2-tailed)	0.008	<0.001	0.443	0.015	0.016	

Logit model: Formula - Chance of successful sperm retrieval = 1.729-0.115(FSH)



- Chance of successful sperm retrieval is **markedly reduced** when **FSH** is **higher than 15 IU/L** by 50%

Odds ratio of unsuccessful sperm retrieval

Klinefelter syndrome	ODDS RATIO: 4.82 (1.05-22.04)	P=0.029
AZFc deletion	ODDS RATIO: 1.03 (0.28-3.80)	P=1.0
Mumps	ODDS RATIO: 0.95 (0.48-1.84)	P=1.0
Varicocele	ODDS RATIO: 1.57 (0.73-3.37)	P=0.333
Smoker	ODDS RATIO: 0.79 (0.42-1.48)	P=0.762
Chemotherapy	ODDS RATIO: 0.49 (0.04-5.43)	P=0.622
Radiotherapy	ODDS RATIO: 4.10 (0.86-23)	P=0.37

- Klinefelter syndrome**: **4 times lower** probability of successful sperm retrieval (**p=0.029**)
- Having AZFc deletion/ mumps/ varicocele/ smoking chemotherapy/ radiotherapy: **no** statistically significant **effect** on the success rate
- Testis sizes**: **Higher FSH/ LH** level → **Smaller testis**; Weakly correlated with testosterone level; Not correlated with age
- Age**: Significant but **weak negative** correlation with **FSH/ LH**
- FSH/ LH**: Highly correlated; **Regression** (Successful sperm retrieval): **FSH p<0.001**; LH p=0.212; i.e. FSH independently affects success rate

	FSH <15 IU/L	FSH ≥ 15 IU/L	P-value	Odds ratio
Unsuccessful sperm retrieval	21	89	<0.00001	11.9 (6.0-23.7)
Successful sperm retrieval	59	21		

- FSH <15 IU/L**: **12 times** higher odds of successful sperm retrieval; **strong predictor** p<0.00001

Conclusion

- Lower** serum **FSH**, **higher** chance of **sperm recovery**
- Age, testis volume, LH, testosterone levels: no predictive significance
- Aid **preoperative counselling** and management strategies