Subannular ventilation tubes. Results in 121 consecutive cases

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1.1 Background

- Duration of conventional TM tubes
  - Donaldson tubes – 7-15 months
  - T-tubes – up to 38 months
- Risk of permanent perforations
  - Donaldson – up to 2 %, but increasing for repeated VT's
  - T-tubes – up to 25 %
- Improvements
  - longer life-time of VT's
  - lower risks of TM perforations

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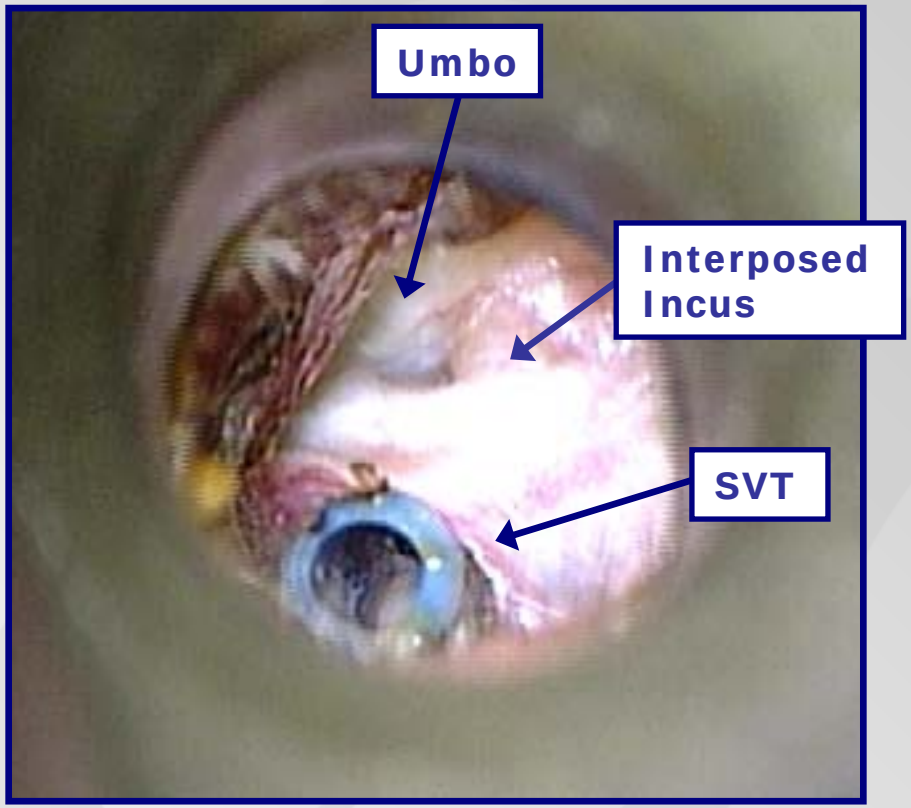
1.2 Background - Objective

- Description of long-term ME ventilation with subannular ventilation tubes (SVT) – Per-Lee (60˚ angle)
  - surgical technique
  - in situ lifetime
  - hearing improvement, check-ups, complications

2.1 Methods – procedure

- Mobilisation of the tympano-meatal flap
- Drilling of a groove postero-inferiorly
- Fitting of the subannular tube
- Insertion of the tube and replacement of the flap
- Additional reconstructions (myringo-, tympanoplasty II, III)



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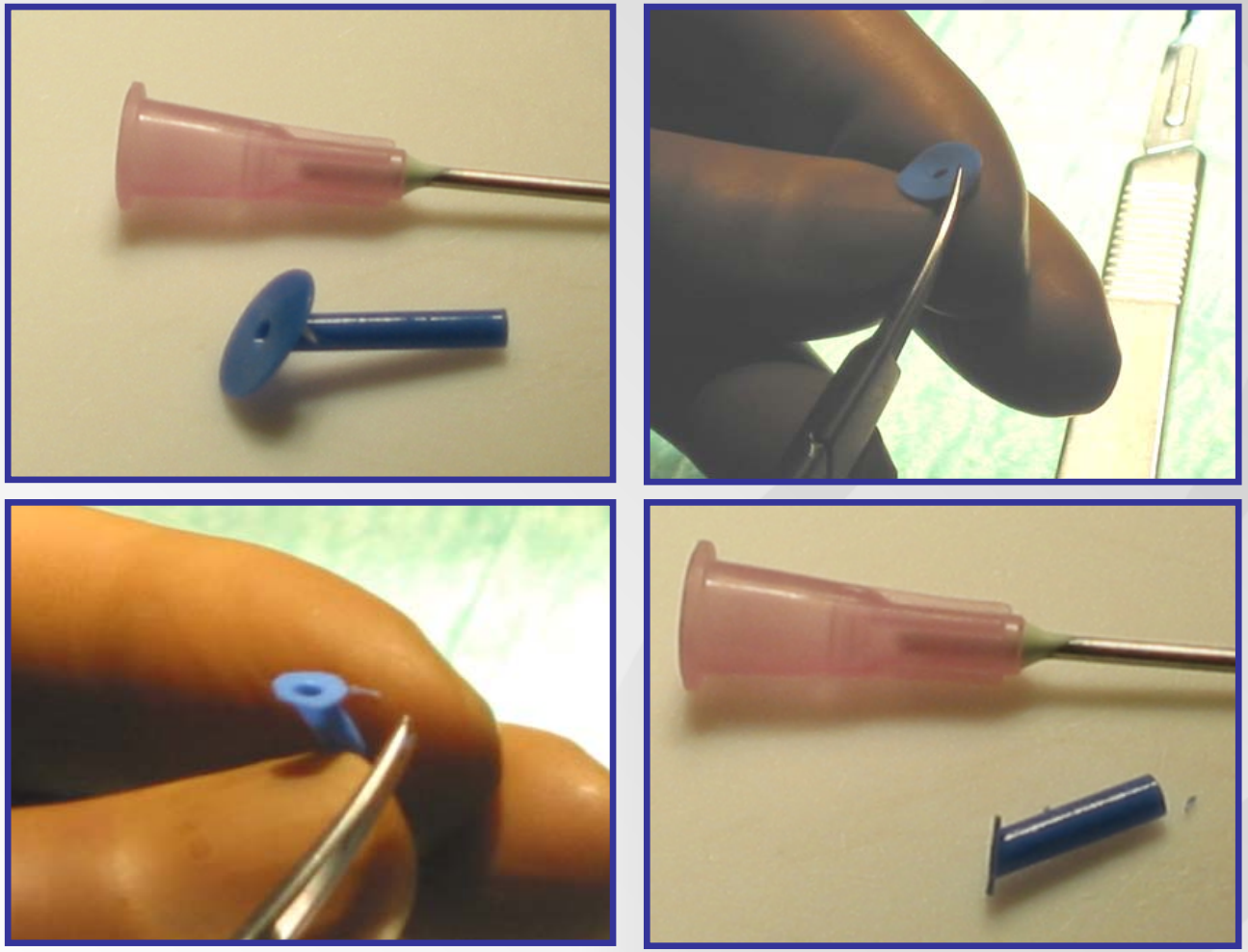
2.2 Methods – fitting the SVT



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2.3 Methods and Materials

- Retrospective follow-up in a series of 121 cases (min 1 year follow-up)
- Data recorded
  - Life-time
  - audiometry before and after the tube placement
  - number of out-patient visits
  - number of early complications
    - Otorrhoea, granulation, crusts, tube plugging, use of ear drops
  - late complications (after tube extrusion)
    - persisting TM perforation

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3.1 Results

- 121 tubes in 93 patients
- Mean age 19 years (range 4 to 70)
- Mean in situ lifetime = 61 months (overall)
  - range = 1.5 to 170; SD = 6
  - Kaplan-Meier plot
- Mean hearing improvement = 17 dB (PTA)
- Mean out-patient controls = 6 per year

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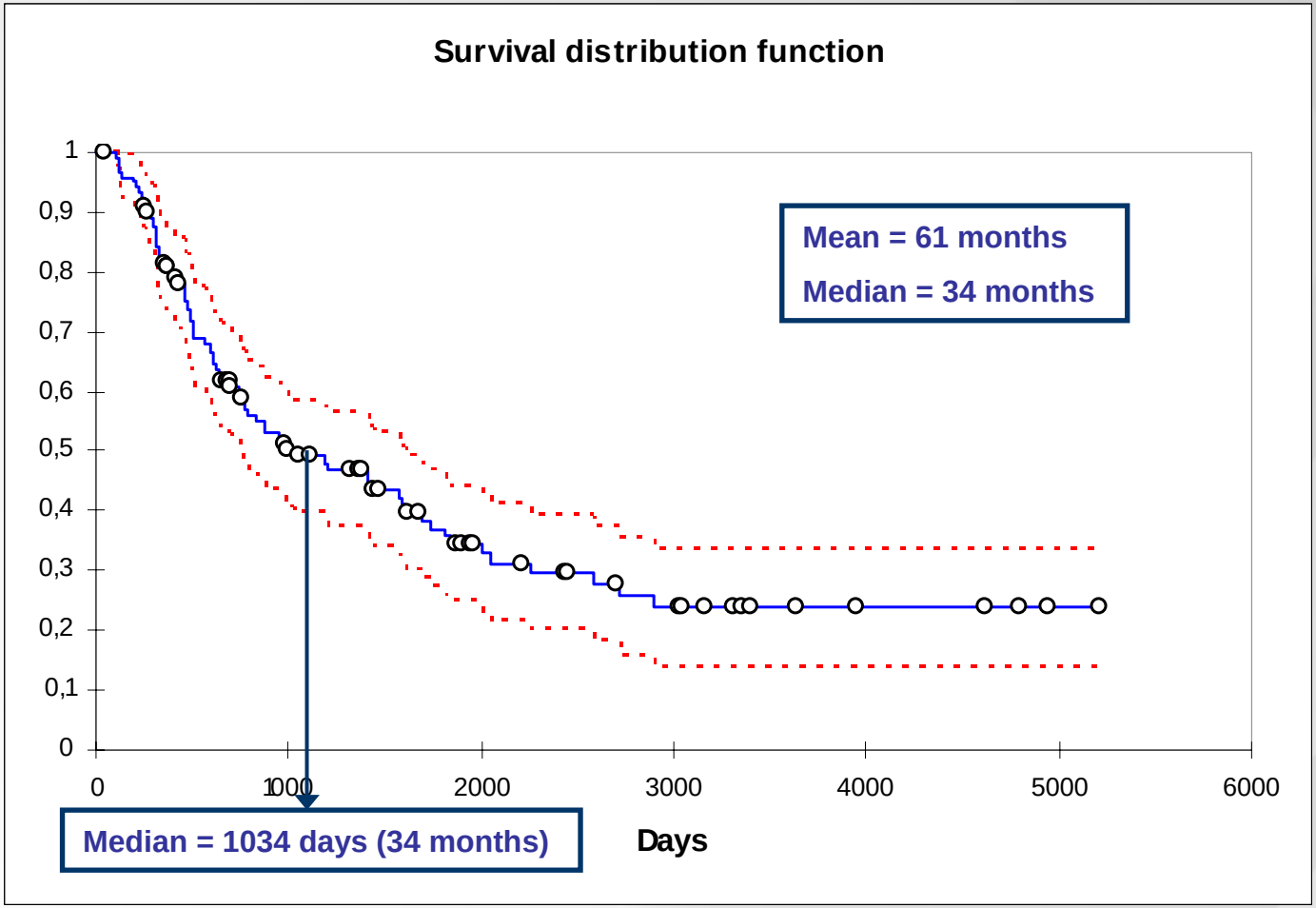
3.2 Results – Kaplan-Meier (all data)



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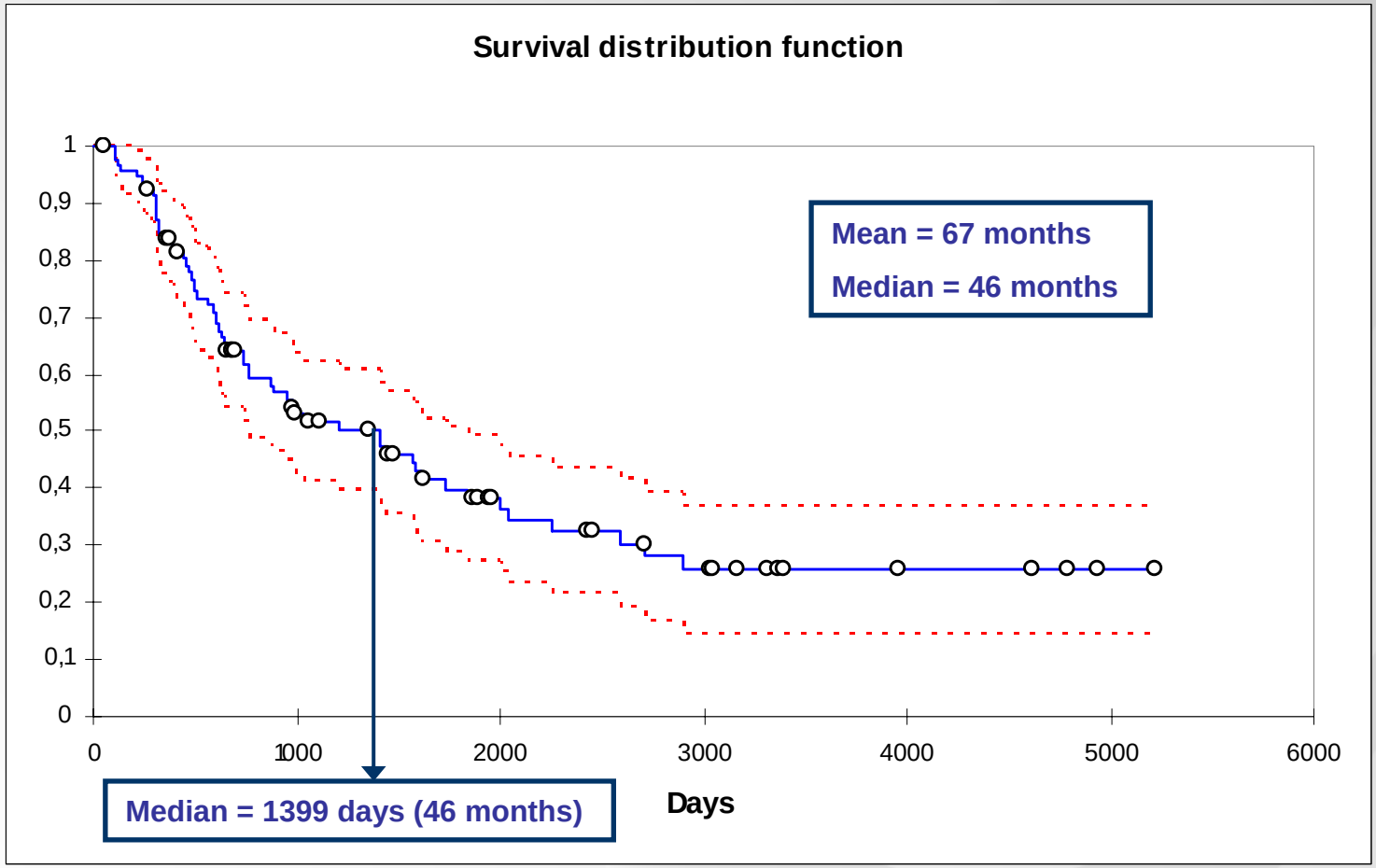
3.3 Results – Kaplan-Meier (type I)



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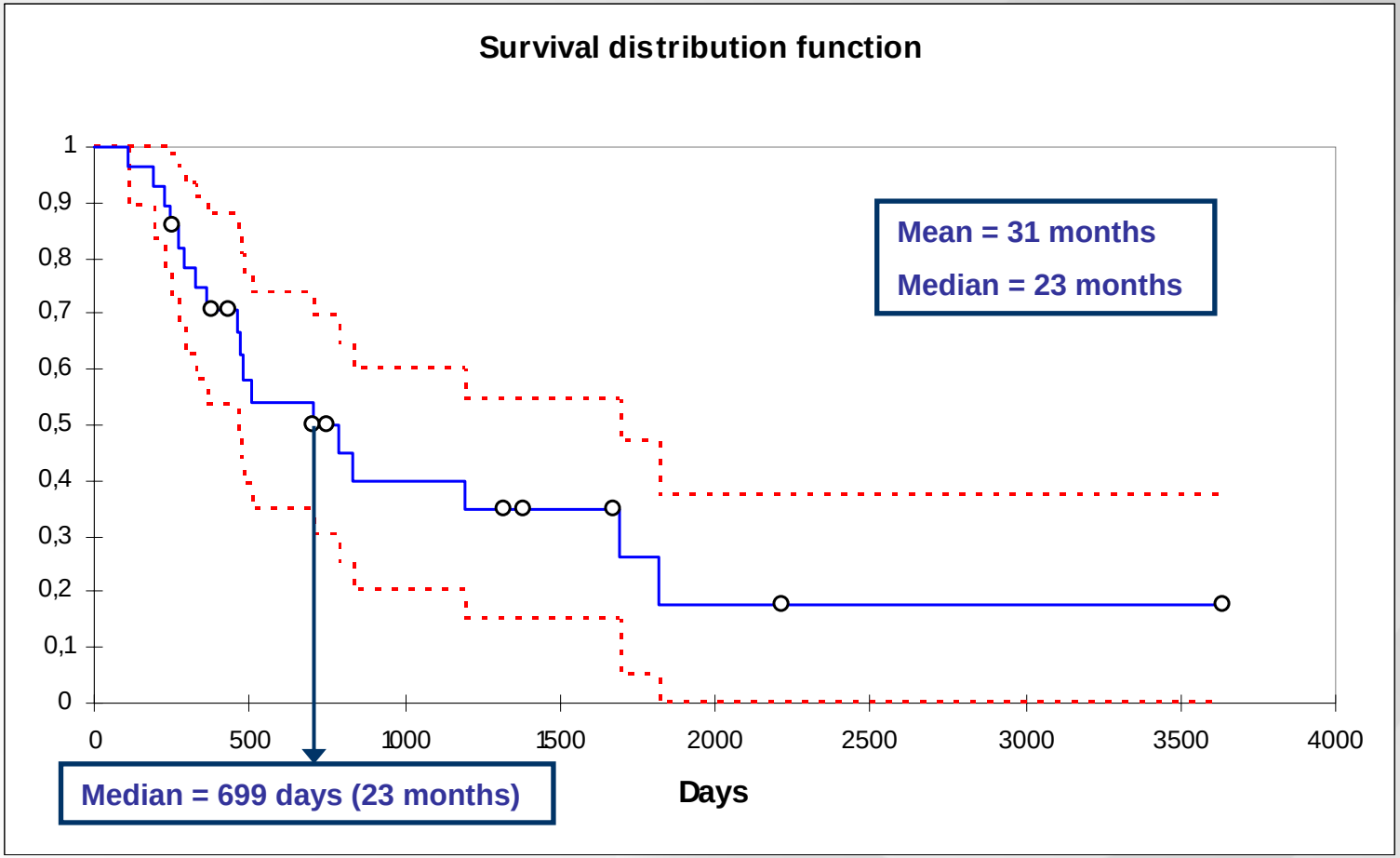
3.4 Results – Kaplan-Meier (type II+III)



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3.5 Life time related to surgery (months)

	All data	Type I	Type II or III
Mean	61	67	31
SD	6	7	5
Median	34	46	23
25 %	15	16	11
75 %	95	(-)	60
N	121	93	28

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3.6 Results – early complications

Crusts	86 %
Plugging	49 %
Otorrhoea	39 %
Granulations	33 %
Ear drops	62 %

3.7 Results – late complications

Persisting perforation	9 %

4. Discussion – previous studies

Type of VT	Location	Life time	Perforation	Authors
Armstrong Shepard Donaldson	TM	7-15 months	0.5-2 %	Goode et al, 1996 Hampal et al, 1991 Levine et al, 1994
T-tube	TM	31.5 months	19 %	Van Heerbek et al, 2002
T-tube Shepard	TM	38 months 11 months	24 % 2 %	Strachan et al, 1996
Short-term Long-term	TM	?	2.2 % 16.6 %	Metaanalysis by Kay et al, 2001 (134 articles)
Duravent	TM	17 months	4 %	Bonvin et al, 2002
T-tube	Subannular	22 months	8 %	Cloutier et al, 2005
Per-Lee	***Subannular***	***61 months***	***9 %***	***Jensen et al., 2007***

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5. Conclusions

- Longest *in situ* life time among all tubes – 5 y's
  - possibly with a fast segregation at first
- Improvement of hearing – matching other studies
- Frequent out-patient controls for prevention of early complications and maintenance of function
- Low risk of persisting TM perforation compared with other long term tubes

- Next – follow-up study describing the long term results *after* extrusion or removal of SVT

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