INTERNATIONAL SOCIETY FOR PROSTHETICS AND ORTHOTICS

2025 STOCKHOLM

I.S.P.O.
20TH WORLD CONGRESS
Stockholm, Sweden
16 -19 June 2025

Outcomes after a transtibial amputation, a comparison between patients receiving the prosthesis early or late – a Swedish registry study

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Funding – ALF-grants Västra Götaland, Södra Älvsborg sjukhus, Alice Swenzons Stiftelse, Sylvans stiftelse, Sparbanken Sjuhärads Stiftelse, Stiftelsen Skobranschens utvecklingsfond, SOIF forskningsstipendium

Ethical approval from Swedish Ethical Review Authority

The authors declare no conflict of interest

Introduction

- Early prosthetic provision has been suggested to create better conditions for good mobility with a prosthesis
- SwedeAmp - number of days from amputation to first prosthesis after TTA is around two months, with large variation
- Are patients receiving a prosthesis earlier comparable to patients receiving a prosthesis later?

Refs: K. Sansam K. et al, J Rehabil Med. (2009), www.rcsyd.se/swedeamp

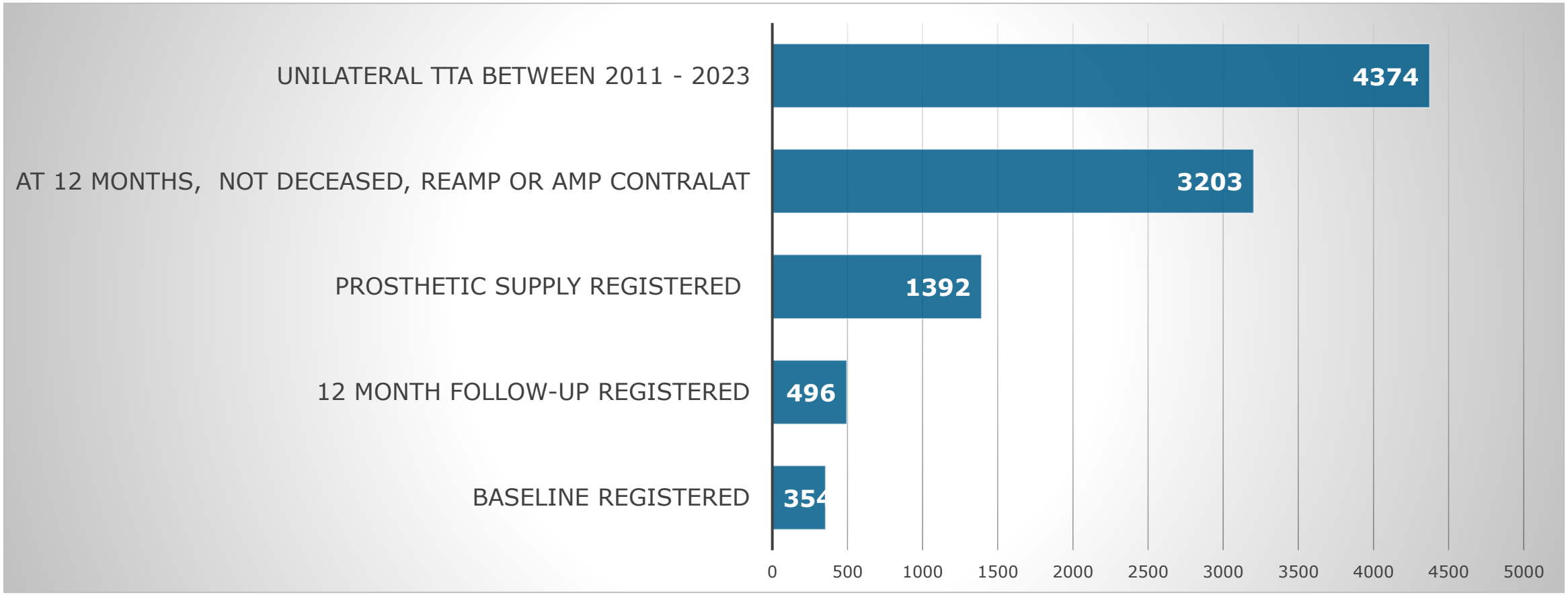
Aim

The aim of this study was to explore potential differences in groups of patients with a unilateral TTA who receive their first prosthesis early or late, using SwedeAmp data.

Method – Inclusion criteria

- ✓ Unilateral TTA 2011 - 2023
- ✓ ≥18 years old at amputation
- ✓ Provided with a prosthesis within 12 months
- ✓ Had been registered at Baseline and at 12 months follow-up
- ✓ Not deceased, re-amputated or amputated contralaterally within 12 months

Method


UNILATERAL TTA BETWEEN 2011 - 2023
4374
AT 12 MONTHS, NOT DECEASED, REAMP OR AMP CONTRALAT
3203
PROSTHETIC SUPPLY REGISTERED
1392
12 MONTH FOLLOW-UP REGISTERED
496
BASELINE REGISTERED
354
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000

Method

- n=354 meet the inclusion criteria
- **The median number of days (64) was used as cut-off for early or late prosthetic fitting**
- Descriptive statistics were used to explore the two groups
- Analyses of differences between groups (p-value<0.05)
  - Independent two-sample t-test used for parametric data
  - Chi-square test used for non-parametric data

Method – comparison of groups

- **Demographic variables**
  - Sex, Age, Amputation cause, Co-morbidity
- **Baseline variable**
  - Locomotor Capability Index Pre (LCI-5 Pre), (0-56)
- **Surgical variables**
  - Surgical flap technique
- **Prosthesis-related variable**
  - Socket process method
  - Suspension
- **Outcomes 12 months follow-up**
  - LCI-5, (0-56)
  - Prosthetic Use Score (PUS), (0-100)
  - Timed Up & Go (TUG), sec

Results

	Total *n=354*	**Early group** *n=173*	**Late group** *n=181*	**P-value**
Age mean (sd)	71.9 (23.7)	71.6 (11.9)	72.1 (13.5)	0.726
Sex n (%)				
- Male	233 (66)	117 (68)	116 (64)	0.503
- Female	121 (34)	56 (32)	65 (36)	
Amputation cause n (%)				
- Diabetes with or without vascular disease	200 (56)	94 (54)	106 (59)	0.53
- Vascular disease without diabetes	102 (29)	50 (29)	52 (29)	
- Other	52 (15)	29 (17)	23 (12)	
Co-morbidity n (%)	*n=242*	*n=129*	*n=113*	
- None	17 (7)	11 (8,5)	6 (5)	0.395
- One condition	104 (43)	51 (39,5)	53 (47)	
- Two or more conditions	121 (50)	67 (52)	54 (48)	
Surgical technique n (%)	*n=210*	*n=134*	*n=76*	
- Sagital/Scew flap	170 (81)	116 (87)	54 (71)	**0.01**
- Anterior-Posterior/Long posterior flap	40	18 (13)	22 (29)	

Results

	Total	Early group	Late group	P-value
Time to prosthesis median (range)	*n=354*	*n=173*	*n=181*	
	64 (16 - 324)	**38** (16 - 63)	**95** (64 - 324)	
Socket process method n (%)	*n=110*	*n=64*	*n=46*	
- Directly laminated socket	87 (79)	60 (94)	27 (59)	**<0.001**
- Hand casting	23 (21)	4 (6)	19 (41)	
Suspension method n (%)	*n=337*	*n=162*	*n=175*	
- Distal connection (pin/lanyard/distal vacuum)	107 (32)	21 (13)	86 (49)	**< 0.001**
- Vacuum passiv	230 68)	141 (87)	89 (51)	
LCI-5 baseline median (range)	*n=349*	*n=169*	*n=180*	
-Total (0-56)	44 (0 - 56)	45 (0 - 56)	43 (3 - 56)	0.332
LCI-5 12 month median (range)	*n=328*	*n=161*	*n=167*	
-Total (0-56)	36 (0 - 56)	40 (1 - 56)	32 (0 - 56)	**0.002**
Prosthetic Use Score (0-100) mean (sd)	*n=354*	*n=171*	*n=179*	
	48.3 (32.6)	55.8 (32.8)	41.3 (30.9)	**<0.001**
Timed Up & Go (sec) mean (sd)	*n=170*	*n=104*	*n=66*	
	26.3 (25.9)	24.2 (27.6)	29.4 (22.7)	0.204

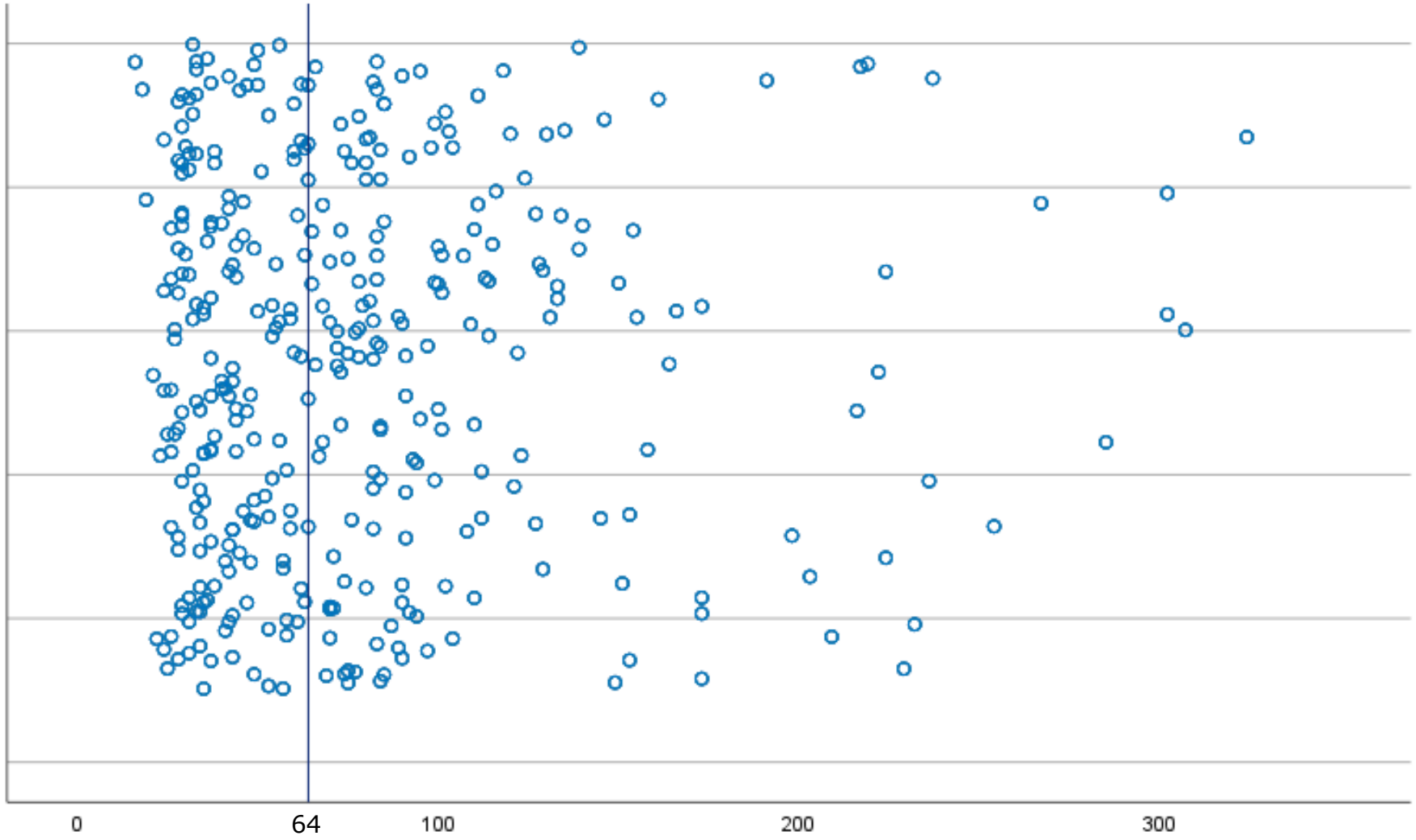
Conclusion

- Basic demographic and baseline variables were similar between patients receiving the prosthesis early or late
- In the early group, a higher proportion had
  - sagittal/skew flaps
  - a directly laminated socket
  - vacuum suspension
- At 12 months follow-up patients in the early group reported better prosthetic mobility and more prosthesis use

Discussion

- Difficult to compare results due to:
  - No established international definition of time to prosthetic fitting
  - Variation in care settings around the world
- Registry data:
  - offers the opportunity to get more data than possible at a single clinic but
  - may contain missings and errors

Discussion – cut off



Coming next…

Analyse the registry data using three groups:

Early, mid & late group

More detailed analyses such as:

Prosthetic and follow-up related variables

Analyses of relations between variables

Thank you all for listening!
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