



Product Benchmark Aortic Stents

SWAN - Scientific Workflow Analysis GmbH (s.w.an) was commissioned with documenting and comparing the use of three different types of abdominal aortic stents from the planning phase to their intraoperative use. For this, the workflows of several operations were recorded in detail. They were then modeled considering the general interventional process and analyzed particularly regarding the use of the individual stent types.

Comparing the interventions it was apparent that the analyzed stent systems showed important differences regarding their insertion. In addition to the purely technical procedure it was possible to pinpoint similarities and differences during the implantation of the particular types of stent systems for the different intraoperative stages.

Table 1 and Figure 1 show the different phases of a stent implantation and a comparison of their average recorded durations.

	Type 1	Type 2	Type 3
Prepare patient	00:08:15	00:09:48	00:08:30
Prepare femoral artery	00:17:18	00:19:23	00:12:52
Anatomy control	00:30:14	00:19:25	00:10:43
Stent placement	00:35:38	01:00:51	01:53:28
Placement control	00:08:55	00:03:33	Not required
Endoleak control	00:00:47	00:00:17	00:02:07
Close	00:23:42	00:10:12	00:18:15
Total	2:04:37	01:56:08	02:45:50

Table 1 Average recorded duration of the individual operation phases

Through closer analysis of the workflows we identified several product-independent phases as well as a product-dependent phase (stent insertion). Placing the stent (from the time of insertion of the catheter until the release of the last stent component) took only half as long for **Type 1** as for **Type 2**.

Exploiting intraoperatively recorded workflows

Comparing stent types and operation phases

Different operation phases and stents

Stent placement shows the largest duration differences

Eliminate product-independent effects and determine product-dependent times



A simple examination of the times from incision to suturing would have resulted in assuming that using stents of **Type 1** or **Type 2** does not influence the operation's duration. Also in our case the total duration was approximately the same irrespective of stent type. This was however due to external factors and not to the stent types themselves

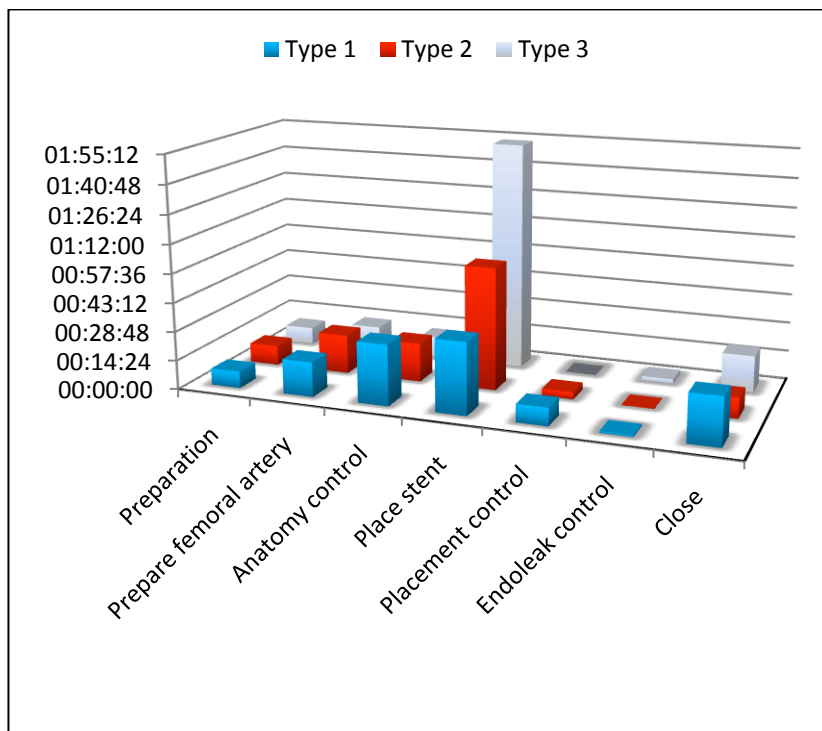


Figure 1: Comparing average recorded duration of individual operation phases

Based on our detailed recordings it was also possible to determine other important interventional parameters such as differences in the administration of contrast agent or x-ray exposure.

Additionally, not only the effects could be shown, but also a plausible explanation of the cause was determined for each stent type.

Conclusions:

- **Considerable duration differences in the stent insertion**
- **Duration of product-independent phases fluctuates strongly and accounts for a similar total average duration**
- **Large differences in the duration of the stent placement, due to constructive differences of the stent placing mechanisms**
- **Product-dependent differences regarding contrast agent administration and x-ray exposure**

Stent	Average time
Type 1	02:04:37
Type 2	01:56:08
Type 3	02:45:50

Duration of operation phases for the compared stent types



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