



Symes Doors

Age:

Sex:

Weight:

Amputation Level: Symes

Previous Socket Design: Stove pipe design or door with straps

Challenges Addressed: Donning and doffing, lifespan of straps, volume changes

Use Case:

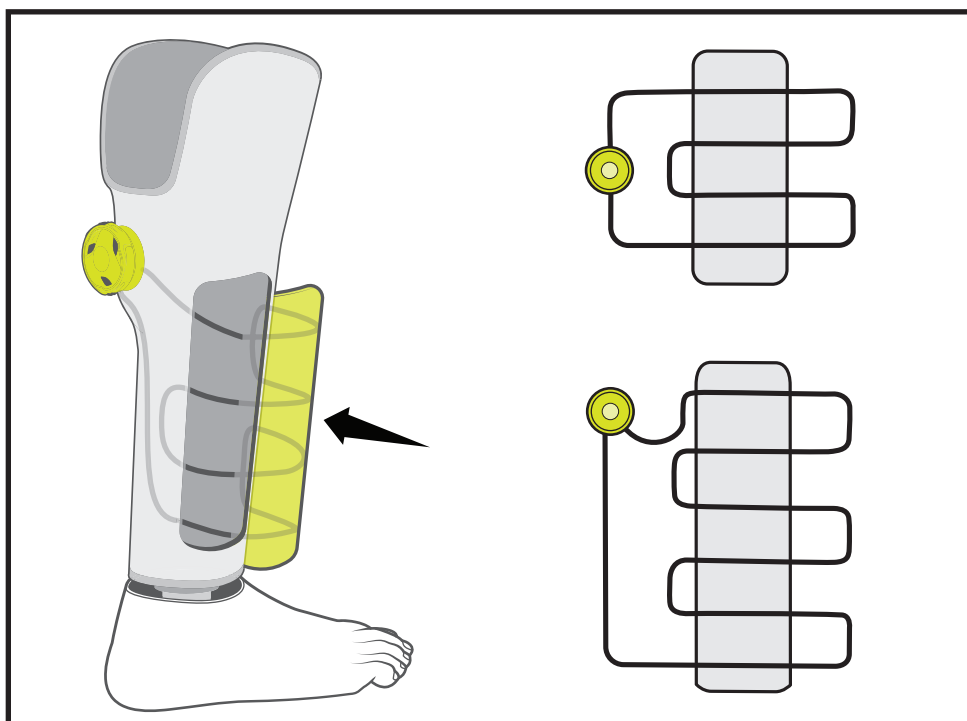
Controlling symes doors with elegant closure and improved suspension

Patient

Challenges:

(anatomical, physical, mental)

Symes sockets are notoriously difficult to fabricate and difficult for patients to take on/off. Typically, Velcro straps are used to close floating panels, however, Velcro straps wear out quickly, collect dirt, and tend to get smelly over time. The straps also tend to ruin the aesthetic of the socket. For patients, straps are also difficult to adjust while wearing pants without exposing their prosthesis. With these challenges, patients often do not don their socket properly or keep it adjusted as volume changes. Given that the floating panel is a main means of suspension, this can create problems for the patient.



Symes Doors (continued)

Protocol & Design:

RevoFit improves results in these four commonly-used Symes designs.

1. The Proximal Anterior shell was primarily for suspension

- a. Dial is located on the posterior of the socket.
- b. The tubing is then routed from the dial to the distal aspect of shell first and then to the proximal aspect second. This lace route allows the distal portion of the shell to close first to create secure suspension. Then the lace tension transfers to the proximal end closing the shell to the proper volume of the limb.
- c. This dynamic element of closure creates secure suspension AND even pressure along the anterior shell.
- d. In this design, the anterior shell has a key notch fabricated into the socket frame to key the shell in place as well as to hold the shell in place while adjusting lace tension.
- e. Floating anterior shell allowed patient to tighten and increase weight bearing proximally when needed.
- f. Open design allowed for increased air flow.



2. The anterior floating panel design was for a pediatric patient

- a. This RevoFit Symes panel functions much the same as any other Symes door, but done in a way that is more elegant and allows a cleaner aesthetic design.
- b. The look of the socket for this pediatric patient was

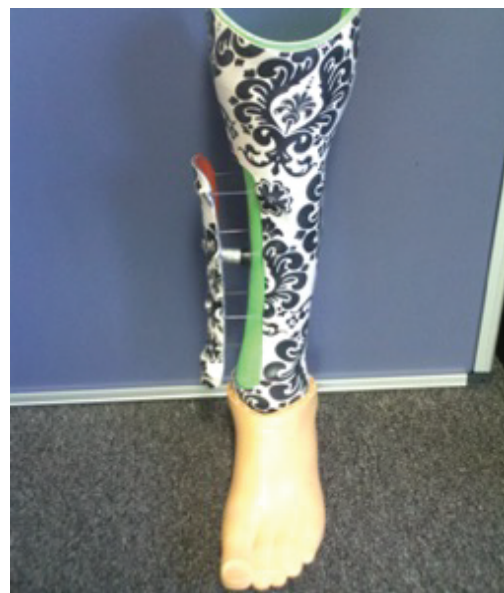


Symes Doors (continued)

very important, so to be able to create functionality AND maintain the design was a significant win for the patient.

- c. The panel was located on the anterior aspect in order to best accommodate the geometry of the limb.
- 3. The medial floating panel was for a female patient.

- a. This RevoFit controlled symes panel functions much like a standard symes panel, but it too has an aesthetic design that greatly improved the look of the socket.
- b. This patient had complained of smelly and worn velcro for many years before we outfitted her with the RevoFit version.



It completely solved the smelly issues for her and provided an easier to use/adjust socket as well.

- 4. The cosmetic Symes application

- a. This RevoFit symes socket has a carved foam covering to conceal the tubing and have a fully natural appearance.
- b. This application took significant work to create, but it provided RevoFit functionality for the patient, a natural aesthetic, and removal of unseemly straps at the same time.
- c. It is not possible to keep the tubing properly in place if the tubing is not held in



Symes Doors (continued)

position with a layer of lamination. So tubes are laminated securely in place first and then add foam over lamination to fill and smooth (note: requires extra lamination).

Patient Outcome:

Patients love the RevoFit symes sockets.

- No straps to deal with.
- Easy to take on/off simply by operating the dial.
- Patients may adjust door through clothing to optimize their fit instantly.
- The sockets are better looking and hence better accepted by the patient.
- Patients thus tend to wear their prosthesis more often and thus gain mobility.
- Patients tend to experience less skin irritation and wound management.
- Patients enjoy reduced hassle of sock management.

Key Learnings:

We often recommend building a Symes design early in the process of learning how to make RevoFit sockets. You have to build a door anyway, so it makes good sense to attempt a more elegant and functional door in the process.

More lace crossings across the door creates more friction and adds time to the open and close process. Limit the number of lace crossings across the panel door to 3-4 maximum.

The illustration below shows a couple of proper lace routes. Adding some additional padding to the door creates some added compression that the patient can engage when active or experiencing volume changes.

