SNaP® mechanically powered negative pressure wound therapy system hyperbaric chamber compatibility assessment

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BACKGROUND

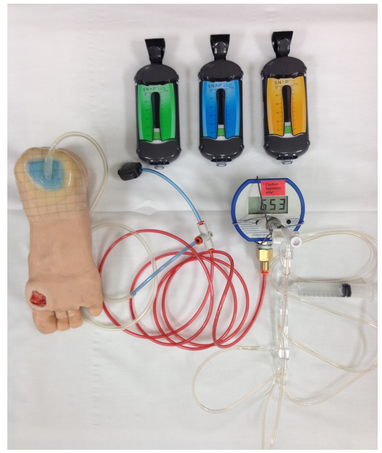
The SNaP® Wound Care System (Spiracur Inc., Sunnyvale, CA) is a mechanically powered negative pressure wound therapy device. The FDA cleared this device in 2009; Spiracur instructions for use require removal of the suction canister during hyperbaric oxygen (HBO_2). Safety and compatibility of the SNaP® during HBO_2 exist and warrant evaluation.

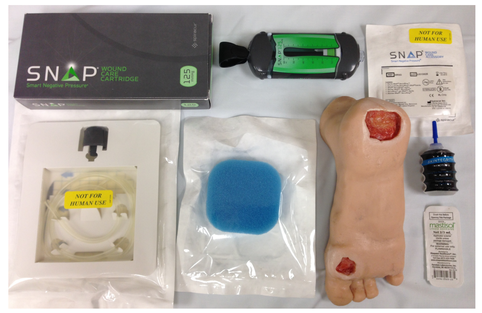
METHODS

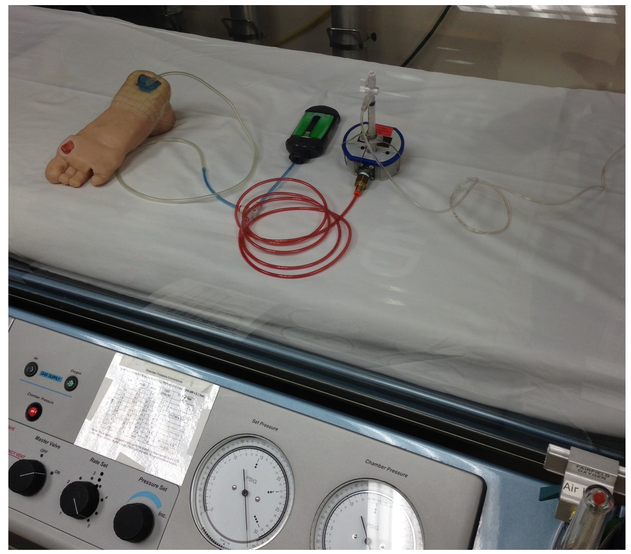
A safety review was completed. A monoplace chamber (Sechrist Industries, Inc., Anaheim, CA) was utilized to pressurize the SNaP® 125mmHg, 100mmHg and 75mmHg devices. We utilized a Nurturing Wounds simulation limb for this evaluation. Chamber pressures were 2.0, 2.4, and 3.0 ATA. A 760-0 mmHgA pressure gauge (DPG10008760MMHGA-5, Cecomp Electronics, Libertyville, IL) was used to monitor the suction provided by the SNaP® device during hyperbaric exposure.

RESULTS

We found no concerns for implosion, explosion, heat or sparking. At ≥2.0 ATA the foam contracted into the simulated wound bed and the plunger remained completely depressed (from starting at 10ml). It remained there until returning to ambient pressure (0.85 ATA) where it was 20ml. The device maintained this volume demonstrating preserved seal and functionality.







Chamber Pressure			SNaP® Vacuum Pressure		
			125 mmHg	100 mmHg	75 mmHg
0.85 ATA	0.0 psig	12.4 psia	-135	-106	-85
2.0 ATA	17 psig	29.4 psia	-77	-42	-14
2.4 ATA	22.9 psig	35.3 psia	-59	-23	+7
3.0 ATA	31.7 psig	44.1 psia	-33	+5	+34

CONCLUSIONS

Our limited experience indicates that the SNaP® Wound Care devices perform appropriately during HBO_2 and maintained functionality after testing. The SNaP® 75mmHg device was unable to maintain negative pressure on the wound at 2.4 and 3.0 ATA and 100mmHg device at 3.0 ATA. Individual patient requirements for mechanically powered negative pressure therapy and specific HBO_2 needs should be considered. Lacking electrical or overtly hazardous components it is reasonable to allow patients to maintain uninterrupted, negative pressure therapy with all SNaP® devices to 2.0 ATA during HBO_2.