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ABOVE-KNEE POLYPROPYLENE PELVIC JOINT AND BAND

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Suspension systems for the above-knee amputation prostheses that do not use suction are usually available in either of two extremes, the flexible webbing type of Silesian belt or the rigid steel pelvic joint and band with an attached belt. Both designs have their indications and are widely used. At the VAPC a thin flexible spring steel pelvic joint and band combination has been used for many years, but the frequency of breakage, noise, and binding at the joint has been high.

It is the purpose of this paper to present a sturdy suspension system for above-knee prostheses. It is fabricated of polypropylene and provides a degree of flexibility somewhere between the presently employed extremely rigid and hyper-flexible systems.

For more than a year now the flexible polypropylene pelvic joint and band (Fig. 1) have been used at our Center. This design provides the prosthetist and the patient with a suspension component with a flexibility between the supple Silesian belt and the rigid steel pelvic joint and band.

The polypropylene unit has been used in various combinations for patients up to this time, and has specific advantages over the spring steel. The joint does not "bind", and neither breakage nor noise is a problem. Maintenance is insignificant. Weight has been reduced greatly, the polypropylene system weighing only about one-fourth that of the rigid metal pelvic joint and band.

The flexibility of the band allows it to spread and thereby provides greater comfort during sitting. When the stump is very short and the patient finds the stability inadequate, a combination of steel pelvic joint and polypropylene band

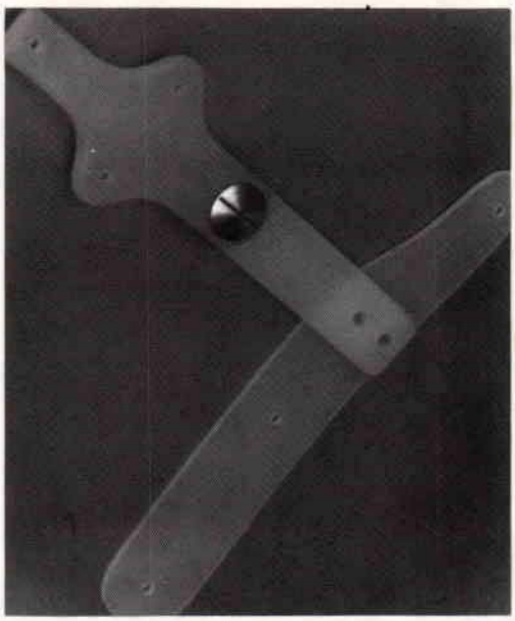

Fig. 1. The polypropylene pelvic joint and band, assembled.

may be employed, allowing for greater comfort on sitting, and yet providing stability when standing and walking.

At present we are fabricating the pelvic joint (Fig. 2) from ¼-in. thick polypropylene sheet and using a stainless steel shoulder bolt and nut for the joint. Nyliner bearings ensure long wear and smooth operation. They can be replaced easily when necessary. The band is fabricated from ⅛-in. thick polypropylene sheet. The joint and band can be shaped readily with a heat gun and attached to the socket with rivets (Fig. 3).

Other similar thermoplastic materials can be used in fabricating the pelvic joint and band. The author has also used high density polyethylene for the band which can be shaped without the use of heat.

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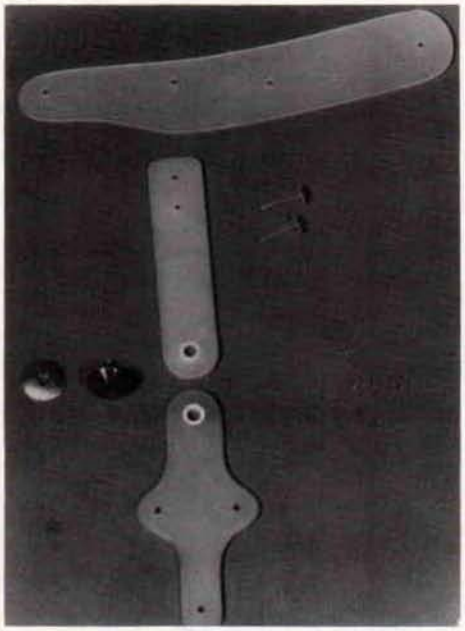

Fig. 2. Components of the polypropylene pelvic joint and band.

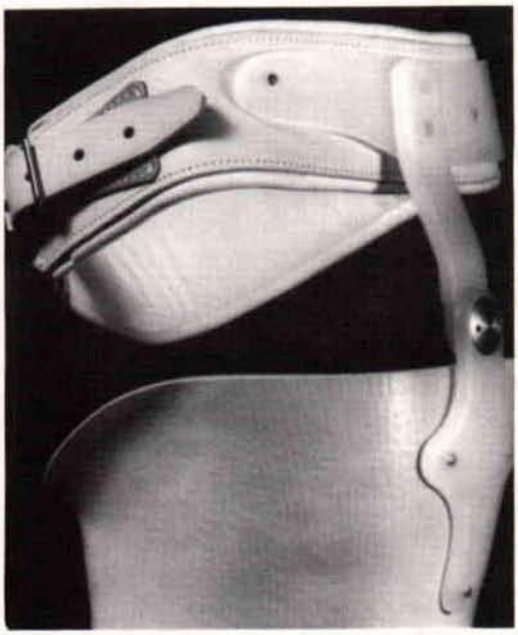

Fig. 3. The polypropylene pelvic joint and band in place on an above-knee amputee.

indicated to the VAPC that they wish to manufacture the joint and band.

It is the author's opinion, and that of his colleagues at the VAPC, that the polypropylene pelvic joint and band are a useful addition to the armamentarium of the prosthetist.

ACKNOWLEDGMENT

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