OBJECTIVE: The Japanese Society for Dialysis Therapy recommends superficialization of the brachial artery (BA) as an alternative vascular access (VA) technique in patients for whom a conventional internal shunt (AVF or AVG) cannot be created. Although 2-3% of Japanese hemodialysis patients undergo this procedure, it is not well recognized worldwide. We report here our experience with the procedure, as well as indications, durability, and morbidity.

METHOD: The technique involves exposure of the BA and ligation of the side branches, then fixing it beneath the skin at the upper arm. Cannulation of the BA is performed 2 weeks or more after surgery and it is used as an outflow route, with any vein in an upper extremity utilized for blood return, including the hand if sites in the arm are not accessible. We retrospectively reviewed our cases of superficialization of the BA for VA.

RESULTS: From 2005-2008, a total of 24 patients [11 females (46%), average age 69 years (range 39-84 years)] underwent superficialization of the BA, of whom 8 (33%) had diabetes. The indications were (1) impaired cardiac function (n=13), (2) no other prospect for AVF or patient refused prosthetic graft implantation (n=5), (3) severe upper extremity arterial disease or ischemic steal syndrome requiring AVF closure (n=3), (4) venous hypertension with central vein occlusion (n=2), and (5) repeated AVF thrombosis due to heparin-induced thrombocytopenia (n=1). The mean follow-up period was 28 months. Serious complications were seen in 1 patient with an infected pseudoaneurysm formation associated with a BA puncture, which necessitated BA ligation, while we also had difficulty finding a vein for blood return in 5 patients. The rate of superficialized BA patency as a functioning VA was 95% and 66% at 1 and 3 years, respectively.

CONCLUSIONS: Superficialization of the BA was found to be a simple and safe technique, with acceptable durability and complication rate in selected Japanese hemodialysis patients. We consider that this shuntless VA permits adequate blood flow and has theoretical advantages for some patients, particularly those with impaired cardiac function, though the availability of a return vein is a prerequisite for a functioning VA.