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**Purpose:** Transfemoral (TF) access is associated with lower rates of surgical conversion and mortality compared with non-TF access for transcatheter aortic valve replacement (TAVR). We herein describe the efficacy and safety of using percutaneous internal endoconduits for TAVR in patients with unfavorable ilio-femoral artery anatomy. **Methods and Results:** Between March 2013 and January 2016, 108 consecutive patients with severe aortic stenosis at high risk for conventional cardiac surgery underwent TAVR at the Cheng Hsin General Hospital. The patients can be divided into two cohorts: in the first cohort (from March 2013 to December 2014), 6 out of the 53 (11.4%) with unfavorable ilio-femoral artery anatomy were treated by trans-subclavian approach (n=3, 5.7%) or direct aortic approach (n=3, 5.7%); while in the second cohort (from January 2015 to January 2016), none (0%) of the 6 patients with unfavorable ilio-femoral artery anatomy among 75 consecutive TAVR cases needed non-TF approach (first cohort vs. second cohort = 11.4% vs. 0%, P<0.01) and they were all successfully treated with the use of an internal endoconduit. **Conclusions:** The use of internal endoconduits can increase the number of patients who can be treated through femoral artery access for TAVR and substantially reduce the need of non-TF approaches.