Objective(s): Failure requiring revision of below the knee amputation (BKA) or high level of amputation can occur in up to 35% of high-risk patients. We sought to determine if use of a placental connective tissue matrix (PCTM) in BKA closure would reduce the rate of failure and accelerate the time to prosthetic fitting.

Methods: A retrospective chart review with a historical cohort comparison group was performed on 14 BKA performed by a single surgeon from 2015-2017. Seven patients (50%) had PCTM (PCTM group) used as part of the closure and 7 patients did not have PCTM applied (non-PCTM group). Baseline demographics were matched in both groups and outcomes were analyzed using Fischer’s exact and Student’s t tests.

Results: The PCTM and non-PCTM groups were similar in terms of age (72.3±4.5 years v. 74.1±3.8 years, p=0.15), presence of diabetes (85.7% v. 85.7%), presence of peripheral vascular disease (100% v. 100%), presence of pre-operative infection (71.4% v. 85.7%, p=0.5) and presence of Wagner grade IV wound (71.4% v. 57.1%, p=0.5). Operative details were also similar in terms of estimated blood loss (120.5±40 cc v. 139.4±22.8 cc, p=0.08) and operative time (158.7±28.1 min v. 149.5±42.6 min, p=0.12). The post-operative infection rate was higher in the non-PCTM group (71.4% v. 14.2%, p=0.01) as well as the need for operative revision (57.1% v. 0%, p=0.03). The conversion to above knee amputation was also higher in the non-PCTM group (28.6% v. 0%, p=0.23) though this did not reach statistical significance. The time to wound healing was shorter in the PCTM group (39.1±4.8 days v. 60.1±12 days, p=0.002) as was the time to prosthetic fitting (50.7±1.8 days v. 71.7±13.5 days, p=0.006).

Conclusions: Incorporation of placental connective tissue matrix into the closure for below the knee amputations was associated with a lower rate of post-operative infection and shorter time to wound healing and prosthetic fitting. Larger, prospective, randomized studies should be performed to determine if there is a significant reduction in conversion to a higher level of amputation in high-risk patients undergoing below the knee amputation.