Durham, NC – Medication and minimally invasive surgery to implant a sling can provide relief for millions of people who suffer from stress urinary incontinence (SUI), but not everyone responds to these therapeutic methods. A new study in the current ***STEM CELLS Translational Medicine*** tests the safety and effectiveness of stem cells as an alternative SUI treatment.

SUI results when the pelvic floor muscles, which support the bladder and urethra, weaken to the point that the muscles are not able to prevent urine from flowing when pressure is placed on the abdomen, such as when the person laughs or coughs. It occurs most often in women, due to childbirth and pregnancy.

“Tissue engineering offers an attractive method to regenerate sphincter muscle,” explained the study’s corresponding author, Kirsi Kuismanen, from the department of obstetrics and gynecology at Tampere University Hospital (TUH) in Finland. She and her TUH colleagues teamed up with researchers from the Adult Stem Cell Group of BioMediTech in Tampere and the University of Twente in the Netherlands on the study.

“Previously, various different cell sources, such as skeletal muscle-derived stem cells (SkMSCs), mesenchymal stem cells derived from bone marrow (BMSCs) and adipose stem cells (ASCs), have been studied for treating urinary incontinence. The SkMSCs and BMSCs would be a potential alternative for incontinence therapy. However, when compared to ASCs, the major limitation of SkMSCs and BMSCs is the difficulty to obtain these cells in large quantities,” Dr. Kuismanen said.

The study involved five SUI patients who either did not want a sling implant or had undergone implants but they proved unsuccessful. They were treated with ASCs combined with bovine collagen gel, which is a bulking agent, and saline.

Prior to the treatment, the ASCs were isolated from subcutaneous fat and expanded for three weeks in a laboratory. The mixture of ASCs and collagen was injected in the patients who were followed for three, six and 12 months after the injections. The primary end point was a cough test to measure the effect of the treatment. Validated questionnaires were used to

determine the subjective cure rate.

After six months, one out of five patients displayed a negative cough test with full bladder. At one year, the cough test was negative with three patients; two were satisfied with the results and ended their treatment for SUI. Validated questionnaires showed some subjective improvement in all five patients.

“This is the first study describing the use of autologous ASCs in combination with collagen gel for female SUI treatments,” Dr. Kuismanen said. “Thus far, the treatment with autologous ASCs has proven safe and well tolerated. However, the feasibility and efficacy of the treatment were not optimal so additional research is needed to develop SUI injection therapies.”

“New treatments are needed for this common condition that affects millions of women,” said Anthony Atala, M.D., editor of ***STEM CELLS Translational Medicine*** and director of the Wake Forest Institute for Regenerative Medicine. “The current study, believed to be the first to evaluate adipose-derived stem cells in combination with collagen, adds to the body of knowledge about the safety and effectiveness of stem cell treatments for stress urinary incontinence.”

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The full article, “Autologous adipose stem cells in treatment of female stress urinary incontinence; results of a pilot study,” can be accessed at http://www.stemcellstm.com .