**Objective**
One prospective option for severe vocal fold scarring is regeneration with a tissue-engineered scaffold containing induced pluripotent stem (iPS) cells. As a first step toward this goal, we investigated the feasibility of utilizing human-iPS cell (hiPS) in an injectable hyaluronic acid (HA) scaffold for the regeneration of the vocal fold in an athymic nude rat injury model.

**Methods**
Three types of injectable scaffolds were prepared – HA hydrogel scaffold, HA hydrogel scaffold containing hiPS and HA hydrogel scaffold containing hiPS with epidermal growth factor (EGF). After 1 and 2 weeks injection into nude rat vocal folds, tissues were excised for histology, immunohistochemistry and FISH.

**Results**
HA hydrogel was confirmed in the vocal folds after 1 and 2 weeks. FISH analysis confirmed the presence and viability of hiPS. A mixed germ cell-like tumor was characterized in one larynx. HA hydrogel scaffold seeded with EGF demonstrated less fibrosis as measured by EVG and collagen staining.

**Conclusions**
hiPS survived in injured rat vocal folds and in the presence of HA hydrogel with EGF improved fibrosis. Further work is necessary to optimize hiPS differentiation and to determine safety for future clinical applications.

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**REFERENCES**