shaker at 37°C.[15] After centrifugation (800×g for 10 minutes), floating tissue (adipocytes and connective tissues) are discarded. The cell pellets are resuspended in Dulbecco's modified Eagle's medium and passed through a 100-mm mesh filter. To eliminate the remaining collagenase, the cells pellets are washed by resuspension in Dulbecco's modified Eagle's medium and after centrifugation at least 3 times. The process takes about 80 minutes (**Fig. 4**). For liposuction aspirate fluid cells, the suctioned fluid is centrifuged (400×g for 10 minutes) and the pellets are resuspended in distilled water (for 30 seconds) for erythrocyte lysis, followed by osmic normalization by adding 10% volume of 10× phosphate-buffered saline (or 9% NaCl solution). After centrifugation (and filtration), cell pellets are obtained as liposuction aspirate fluid cells; the process takes about 20 minutes. For these SVF cells, cell counting for erythrocytes and nucleated cells is performed using a hematocytometer used for blood testing. The SVF cell number is affected largely by hemorrhage contamination. Normal viable nucleate processed lipoaspirate cells cell number is 300,000 to 800,000 per 1 mL of aspirated adipose tissue.[1] Before injection, freshly isolated SVF cells or cultured ASCs are added to graft materials, followed by gentle mixing and a 5- to 10-minute incubation period to achieve appropriate cell adhesion to the graft tissue.

Clinical Reports of Cell-Assisted Lipotransfer

There are some studies reporting the clinical outcomes of cell-assisted lipotransfer. Although lipotransfer supplemented with ASCs or SVF cells have shown therapeutic potential in uncontrolled trials and comparative case series,[16–22] the clinical results remain controversial. Recently, some comparative studies of cell-assisted lipotransfer were reported. Chang and colleagues[23] reported a volumetric analysis of SVF-supplemented fat grafting and regular fat grafting to progressive hemifacial atrophy patients, concluding that fat survival and clinical improvement was greater with SVF-supplemented grafting than fat grafting alone after 6 months. Tanikawa and colleagues[24] reported that SVF-supplemented fat grafting for patients with craniofacial microsomia was effective. Survival fat volume was 88% at 6 months, which was significantly greater that nonsupplemented fat grafting (54%). Gentile and colleagues[25] applied SVF-supplemented fat grafting to the face and reported significantly better contouring maintenance compared with fat grafting alone. In contrast, Peltoniemi and colleagues[26] and Wang

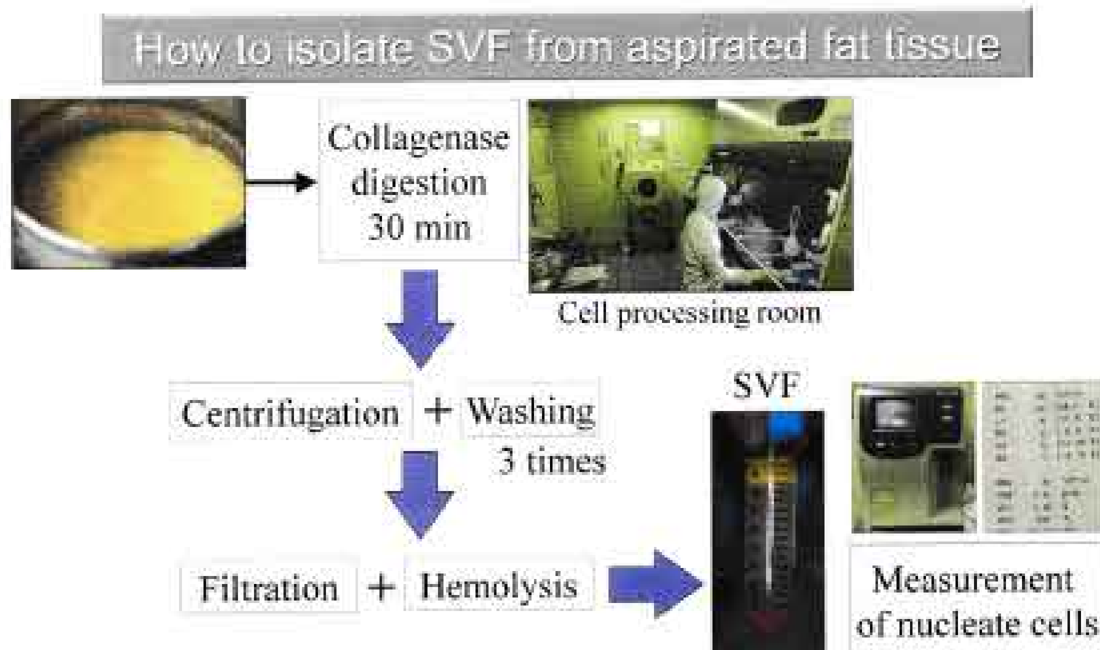

Fig. 4. Collagenase digestion process of aspirated fat for stromal vascular fraction (SVF) isolation. Aspirated fat is digested with collagenase for 30 minutes and the isolated cell fraction can be collected after spinning. Then, we wash the SVF cells, remove red blood cells by incubation with hemolysis buffer, and count the obtained nucleate cells with a hematocytometer or cell counter. The whole process should be performed in a clean room and takes about 80 minutes.