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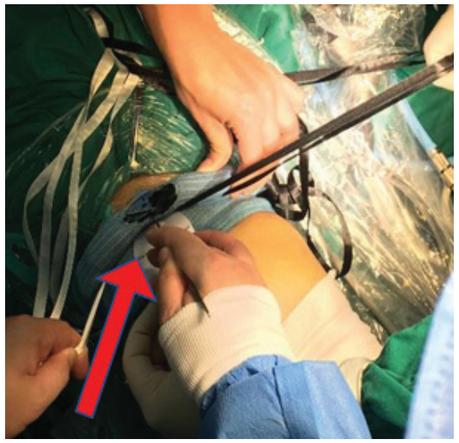
HemaClear in Knee Arthroscopy and ACL Reconstruction (4) – HemaClear removal at End of Surgery

Cutting the HemaClear ring at the end of surgery with a scalpel **(right)**. The Protective card (red arrow) is used to protect the skin. The marks on the skin **(left)** are minimal (yellow arrow). Reactive Hyperemia is normal physiological vasodilatation after a period of ischemia. The color returns to normal within minutes.



Above: Most surgeons first suture, dress and apply compressive packing prior to removal of HemaClear (left and middle). Always be sure to observe the color of the toes and capillary filling to document resumption of normal circulation (right).

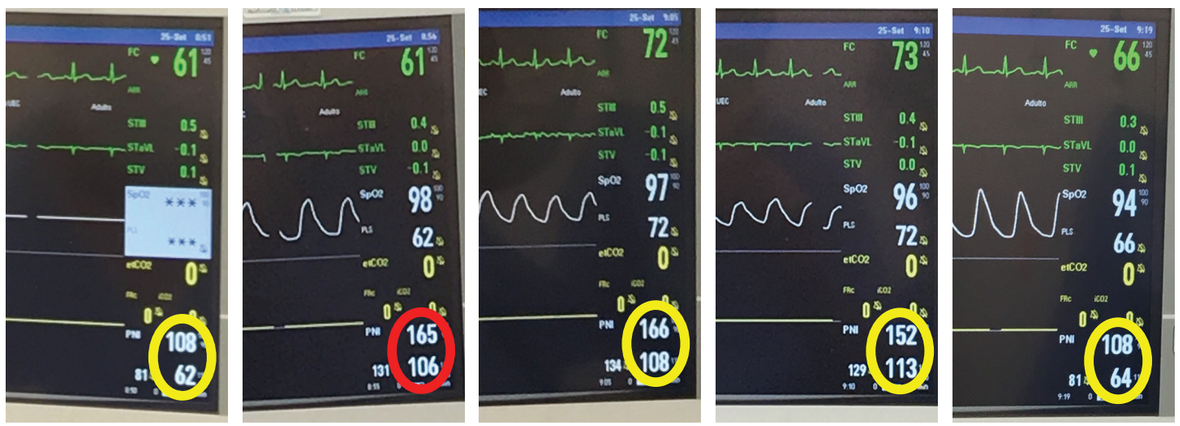
Just after **HC placed BP** is 108/62;

Oops, pain! 165/106;

After adding analgesia 166/108;

Before HC removal 152/113; SPO2=93

After HC removal 108/64; SPO2=94



BP and SPO2 at different times during surgery. Note: Excessive Blood Pressure in second picture is right after first incision was made. It did not cause Tourniquet Failure. BP dropped after opening the HemaClear. This is a normal reaction to opening up the empty vascular volume in the leg.

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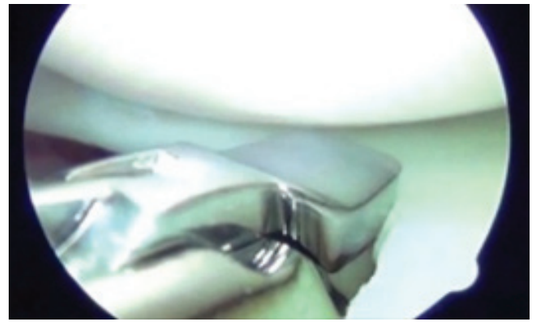
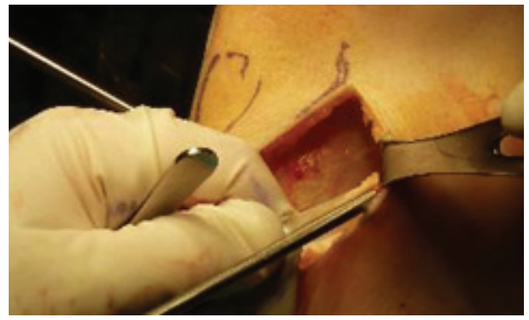
Can use of HemaClear® obviate the need for allografts in ACL reconstruction?

Knee Arthroscopy uses a miniature video camera to visualize and guide the use of tools inside the knee. Bloodlessness is key to visualization as blood cells floating in the fluid filling the knee blurs the picture and causes "ground-glass" view. HemaClear Sterile Exsanguination Tourniquet provides ultimate bloodless field and as such a much superior image (picture on right).

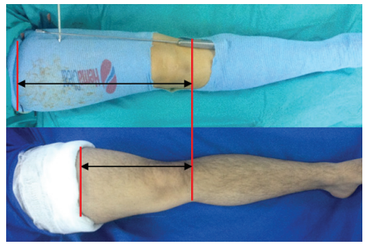
Additional advantages include (a) longer hamstring and/or gracilis ligaments for ACL/PCL reconstruction; (b) ease of knee flexing and mobility during surgery; (c) sterility; (d) shorter tourniquet time; (e) no need for cautery; and (f) less clutter and fluid use. This in addition to the general benefits of HemaClear such as: (a) no skin injury and nerve damage; (b) much reduced postoperative pain; (c) less Surgical Site Infection (SSI); (d) less (no) intraoperative blood loss; (e) and no intra-vascular clotting.





Figures: Top: image on monitor when HemaClear is used. Note the sharpness of the picture. Bottom: incision during harvesting. Note field dryness. No blood on gloves.

Figure shows workable space with HemaClear (top) and pneumatic tourniquet bottom.



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Article

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The effect of tourniquet type and thigh conicity on the length of hamstring autograft

Mehmet Faruk Çatma[1] and Alper Öztürk[1]

Abstract

Purpose: We studied the effect of using wide contoured pneumatic tourniquet (PT) versus ultra-narrow sterile exsanguination tourniquet (SET) on the length of hamstring autograft for anterior cruciate ligament (ACL) reconstruction in patients with tubular and conical thighs. Methods: Fifty-eight patients undergoing ACL reconstruction between 2012 and 2013 were assigned to either SET or PT groups. We measured the tendon graft length and width as well as the patients' height, weight, and thigh circumference at 10 cm proximal to the patella and the distance from the anterior – superior iliac spine to the medial malleolus (ASIS-MM). We defined the ratio between the ASIS-MM and the thigh circumference as the conicity index (CI). All grafts were measured after folding into half, and the found value was recorded as functional graft length (FGL). Tendon graft dimensions were correlated with the individual anthropometric data and with CI in each of the groups. Results: PT was used in 34 patients and SET on 24 patients. **FGL was 12.7 + 0.84 mean standard deviation for the SET group versus 11.5+1.61 for the PT group (p = 0.0011) with a strong positive correlation between FGL and CI for the PT group (R2 = 0.625; p = 2.6 x 10-8) but nonsignificant correlation for the SET (R2 = 0.222).** Graft thickness was correlated with the patient age (R2 = 0.450) but not with CI or type of tourniquet used. We found the CI to be a better measure of thigh conicity than thigh circumference, length, height, weight, or body mass index individually. Conclusion: We conclude that using the SET which occupies less space on the thigh yielded significantly longer hamstring autologous ACL graft compared to the PT and the FGL became essentially independent from the CI when the SET was used.

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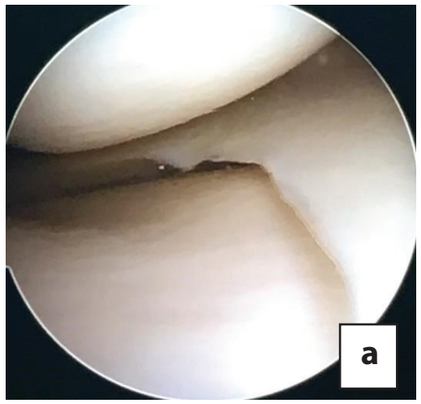
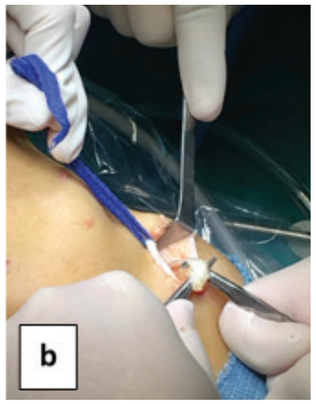
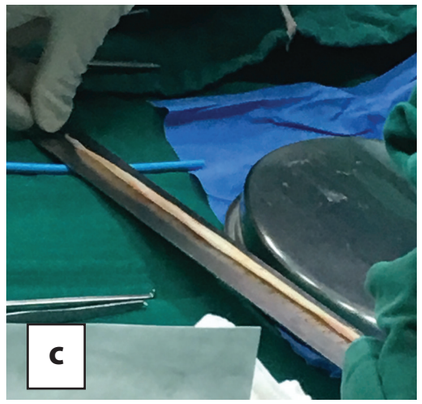
HemaClear in Knee Arthroscopy and ACL Reconstruction (3) - Surgery



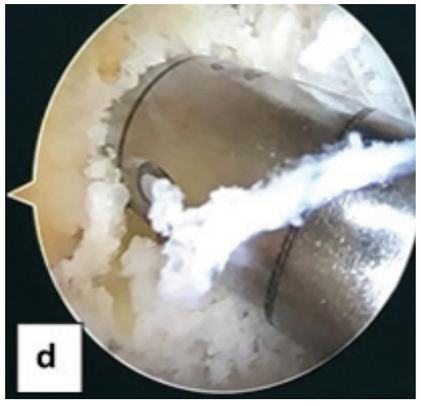


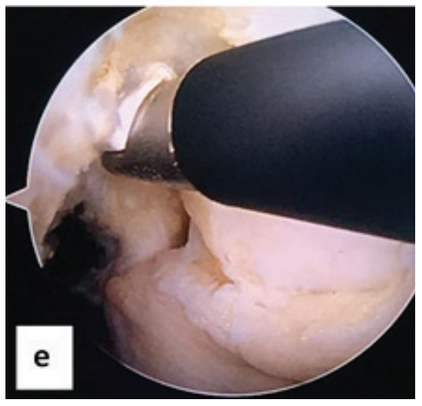


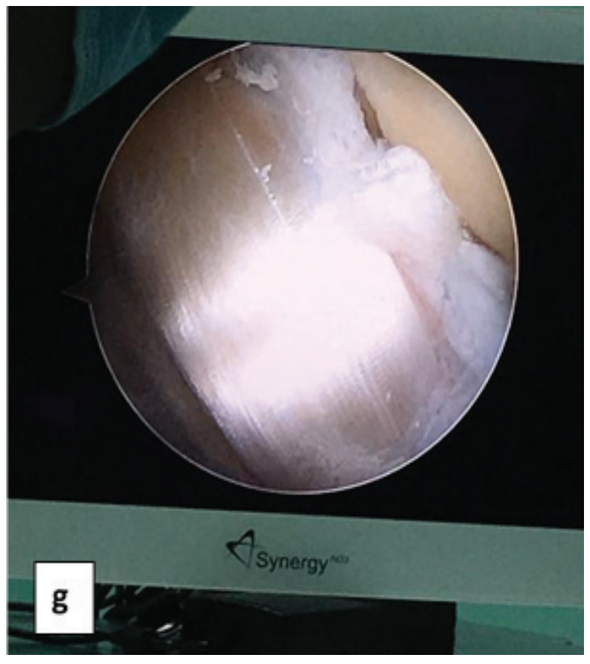
Above: (a) Tear in meniscus visualized and repaired; (b) harvesting of ligaments; (c) this ligament is 29 cm long, very suitable for autograft

On right: (d) and (e) drilling channels for anchoring graft, note clarity of image.

Below: (f) knee mobility is helpful. Arrow points to HemaClear ring position. It cannot roll back down even with extreme knee motion. (g) shows the graft in place.







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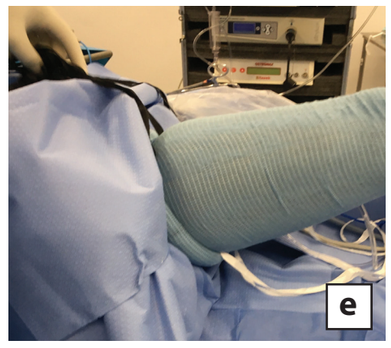
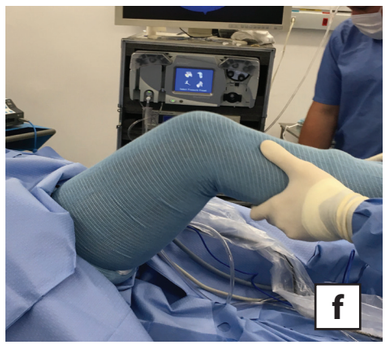
HemaClear in Knee Arthroscopy and ACL Reconstruction (2) – Technical Points

Leg holder, prepping and draping; (below, from left): (a) disinfection; Red arrow points to the lateral leg holder; (b) Black arrow points to the leg holder now covered with a sterile drape; (c) the leg is covered with the proximal edge of the drape at the groin level as shown in (d), green arrow.

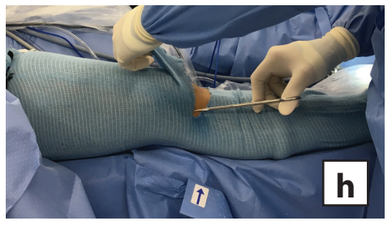
Leg positioning (right) is up to the surgeon. Here we see the leg hung over the edge of the table. This is how this surgeon usually does knee arthroscopy.

HemaClear placement (e) HemaClear XL is placed very high on the thigh to overlap the edge of the drape; doing so facilitates free mobility of the knee (f); it also minimizes postoperative tourniquet pain.

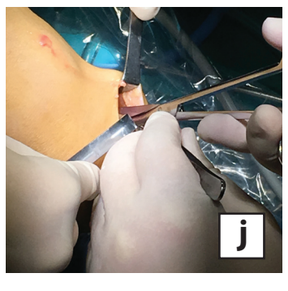




Prevention of lint; Wetting the stockinet with a damp towel (g) minimizes the spreading of lint when the fabric of the stockinet is being cut (h).



Sterile fluid is used to wash away debris from the cutting and grinding inside the knee (i). Two fluid collection styles are shown (j & k). Much less fluid is needed when HemaClear is used.



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