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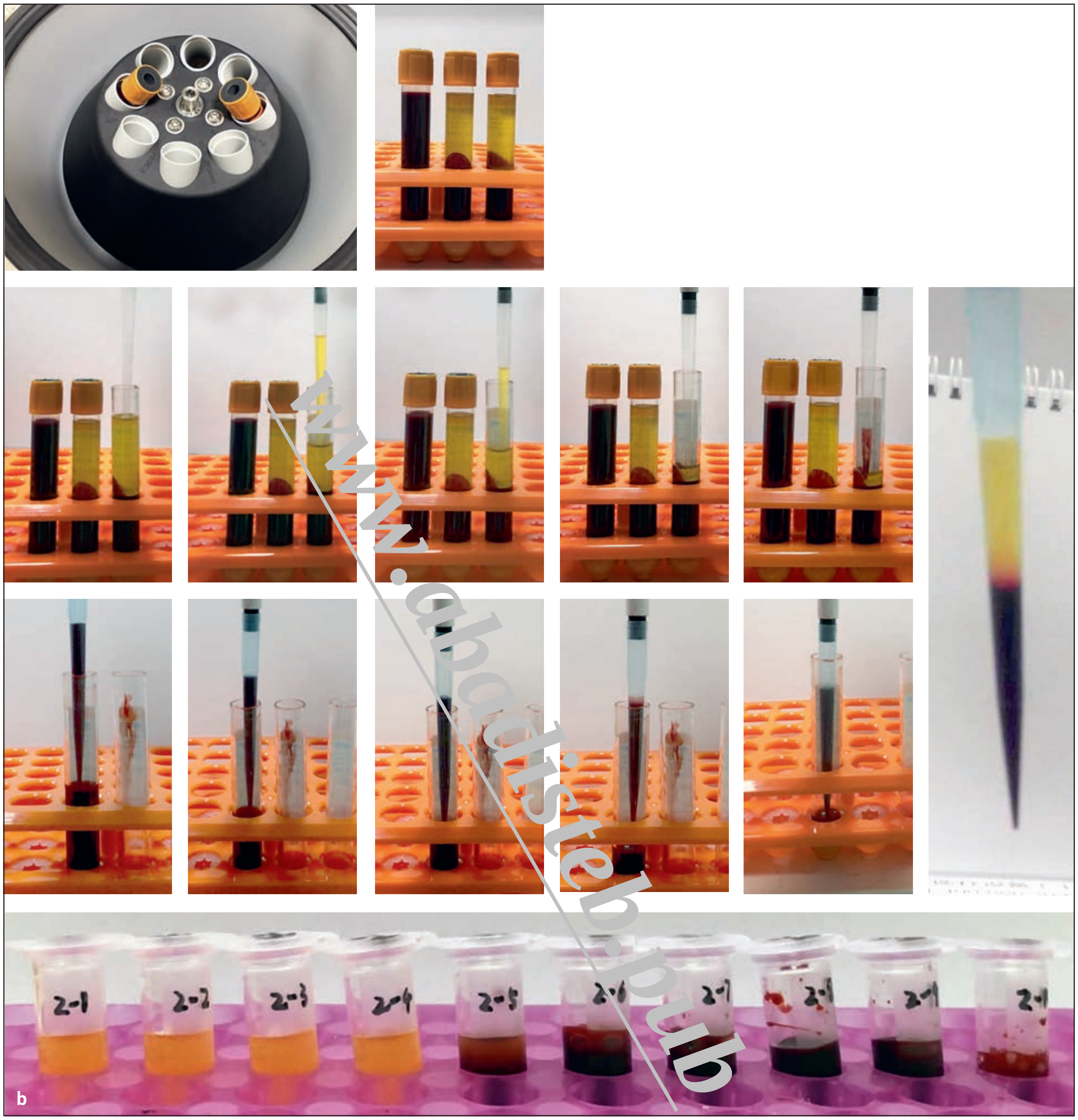

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Fig 2-13 *(cont)* *(b)* Visual demonstration of the protocol. Following centrifugation with two 10-mL centrifugation tubes, blood layers are then separated. Thereafter, 1-mL samples are pipetted precisely from the upper layer downward. Notice that when layer 5 was drawn, it was possible to visualize the layer separation between the yellow plasma and RBC layers. This separation layer was noted for all samples. (Reprinted with permission from Miron et al.[50])

L-PRF protocol

Following centrifugation, 1-mL sequential layers were sent for CBC analysis according to Fig 2-14a. As Fig 2-14b shows, the original L-PRF protocol using the IntraSpin device (2700 rpm for 12 min; ~700g) with a 33-degree fixed-angle centrifuge revealed precisely that the number of leukocytes (control 6 × 10^9 cells/L) and platelets was significantly concentrated in layer 5 (~17 × 10^9 cells/L; *arrows* represent where the plasma and RBC layers separate). Interestingly, a threefold to fourfold increase in leukocyte number was observed specifically at this interface within the buffy coat. Notice, however, that no leukocytes

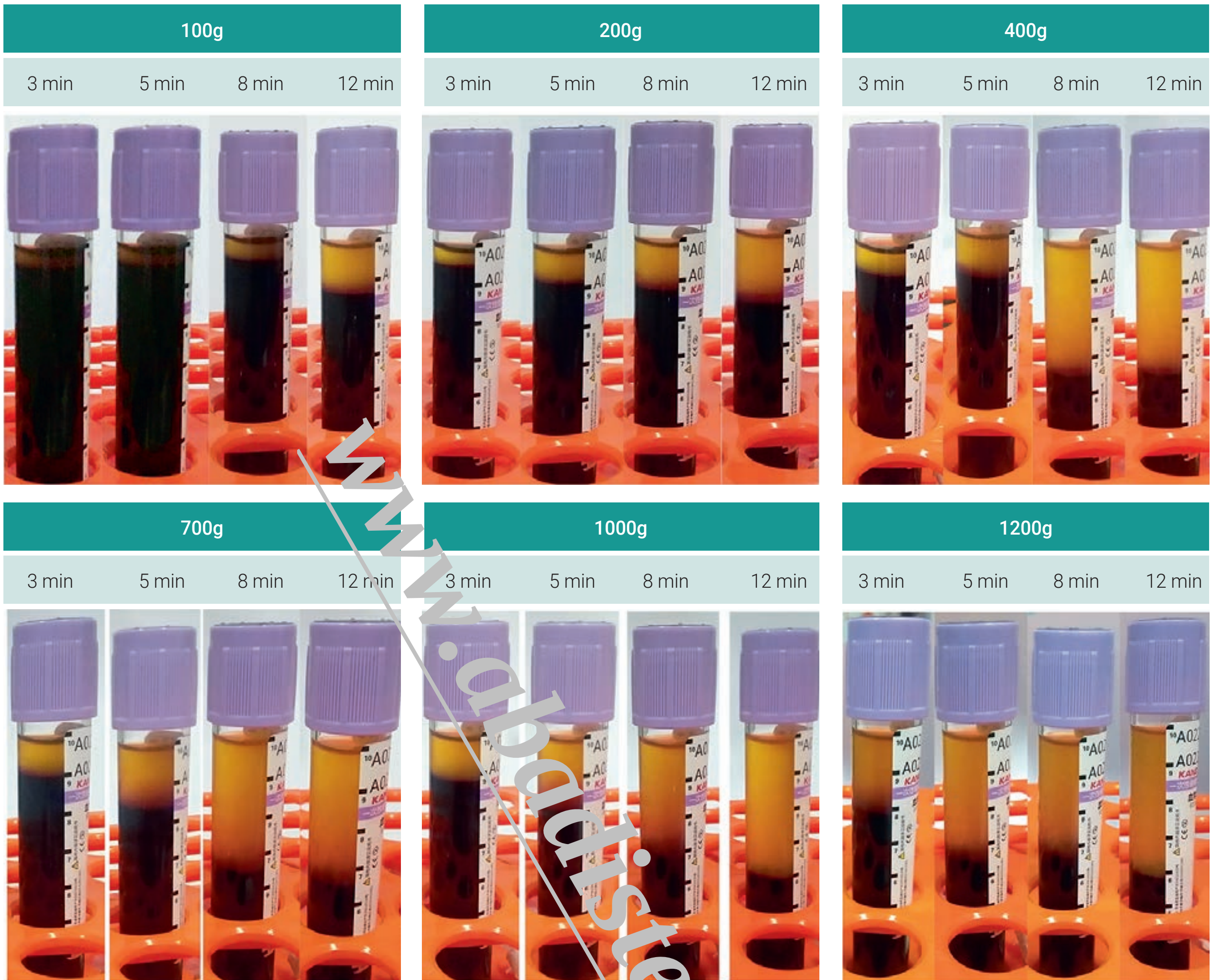

Fig 3-15 Clinical image demonstrating the plasma layer separation for the 24 protocols investigated in this study. Note that while some protocols reveal roughly identical plasma layer separation, the underlying cellular content in the various protocols may be drastically different. (Reprinted with permission from Miron et al.[8])

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that certain centrifugation protocols that were too reduced in RCF (such as 100g) typically did not lead to adequate yield of cells. This relates with our group's previous work on i-PRF demonstrating that these low centrifugation speeds and time (~800 rpm for 3–4 minutes) led to substandard concentrations of platelets and leukocytes (see chapter 2). Protocols that were too fast or lengthy (1000g or more) led to a reduction in yield and/or concentrations (as more cells then got pushed into the bottom layers or the volume of total plasma led to a reduction in concentration).

To simplify Fig 3-16, certain time points were removed from the graph to facilitate its understanding for the reader. Figure 3-17 demonstrates only two protocols (700g and 1000g) over time. Note that in Fig 3-17a, a general increase of centrifugation time is associated with an increase in platelet yield. Note, however, in Fig 3-17b that an increase in centrifugation time actually decreases the concentration of platelets (because the plasma volume is increased, so even if the total yield of platelets remains the same or even slightly higher, the actual concentration decreases).

In Fig 3-18, the 100g protocol is included as well. Notice here how the yield is extremely low in platelets (Fig 3-18a) as well as in concentration (Fig 3-18b). This is a result of the speed cycle simply being so slow that it is unable to

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Fig 7-3 Step-by-step clinical demonstration of the production of e-PRF. *(a)* Venipuncture and blood collection. *(b)* Centrifugation. *(c)* Required materials for e-PRF production. *(d)* Bio-Heat medical device to heat the serum and PPP. Note that the machine must be preheated prior to its use. *(e)* Following centrifugation, collection of the serum plus PPP. *(f)* Introduction of the PPP in the Bio-Heat device at 75ºC (10 minutes). *(g)* The remaining platelet-rich layer is kept in the Bio-Cool device to extend clotting time. *(h)* After 10 minutes, collection of the liquid-PRF + buffy coat zone. *(i)* Following 10 minutes, clinical differences in color are observed between the liquid-PRF *(top)* and the albumin gel.

After 10 minutes at an operating temperature of 75°C, the syringes are then removed and allowed to cool within the Bio-Cool device for 2 minutes (see Fig 7-3g). Liquid-PRF (preferably C-PRF) is then collected (see Fig 7-3h). Figure 7-3i demonstrates the noticeable color difference between the albumin gel and standard liquid-PRF. Thereafter, the albumin gel and the liquid-PRF are mixed together between syringes by passing back and forth using a female-female luer-lock connector (see Figs 7-3i to 7-3m; Video 7-2).

Video 7-2

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Fig 12-5 *(a to d)* Multiple gingival recessions from canine to first molar in the maxilla. *(e to l)* Surgical technique. *(e)* A flap for multiple gingival recessions has been elevated with a split-thickness approach. *(f)* A-PRF prepared. *(g)* The A-PRF has been applied to cover all teeth affected by gingival recessions. Multiple layers have been applied. *(h and i)* Lateral view showing the thickness of A-PRF material applied to the root exposures. *(j and k)* Lateral view showing the flap coronally advanced and completely covering the A-PRF material. *(l)* Frontal view showing the flap covering in excess all gingival recessions. *(m to p)* Six-month follow-up. *(m)* Complete root coverage with increase in keratinized tissue height has been achieved in all treated gingival recessions. *(n to p)* Lateral views showing the increase in gingival thickness at all teeth previously affected by gingival recessions. (Case performed by Dr Giovanni Zucchelli; reprinted with permission from Miron and Choukroun.[34])

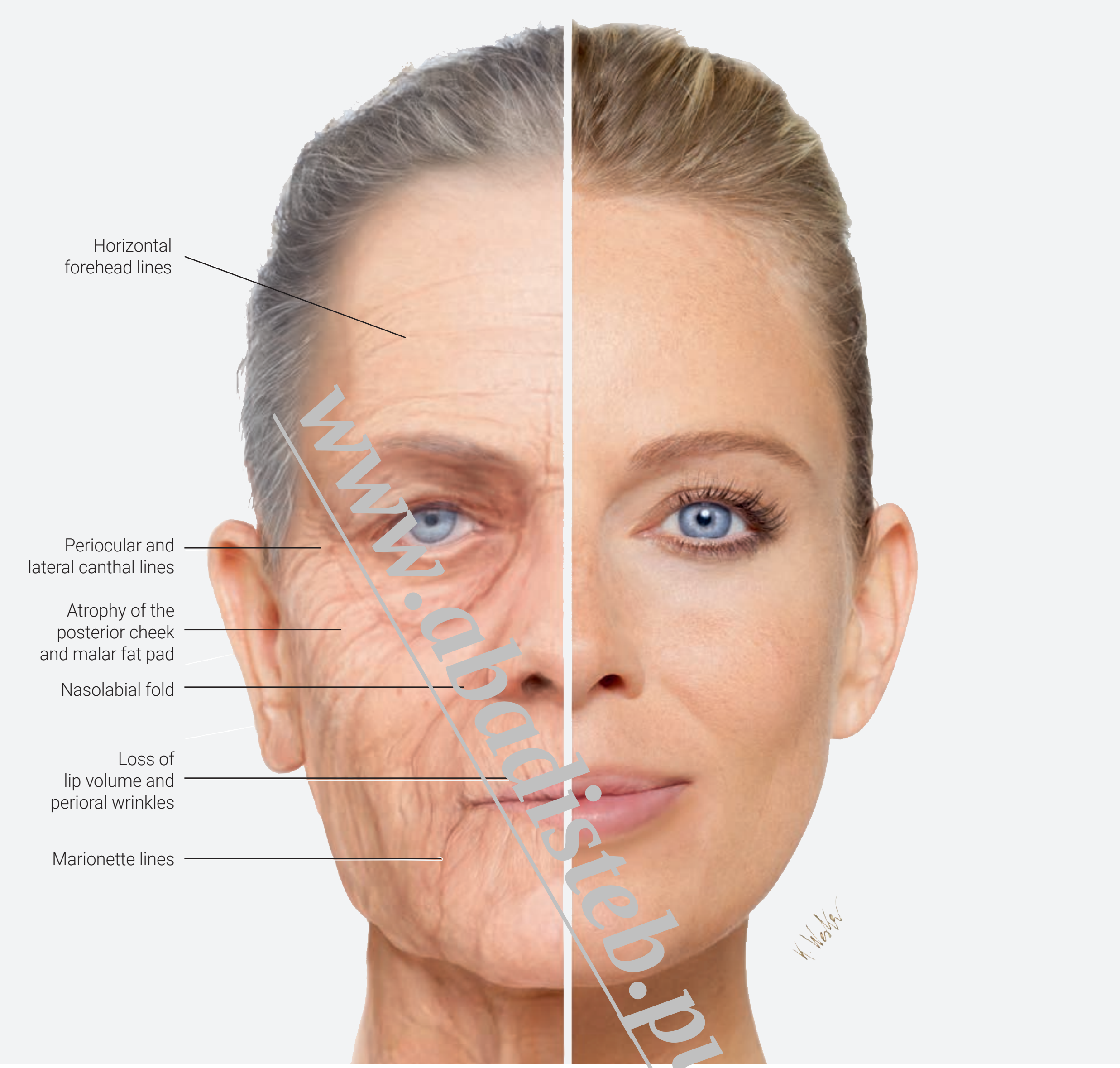

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Fig 20-5 Commonly requested regions for facial injections. (Reprinted with permission from Sattler and Gout's *Illustrated Guide to Injectable Fillers* [Quintessence, 2016].)

be. Detailed protocols for each region are available in the recent book *PRF in Facial Esthetics* by Catherine Davies and Richard J. Miron (Quintessence, 2020).

Cheek injection

The aim of treatment to the cheek area is to beautify the cheekbone region, restore youthful volume to the anterior cheek, provide lift within the subzygomatic area, and cause a decrease to the nasolabial fold.

First, draw two intersecting lines: one from the alar groove of the nose to the top of the tragus of the ear and one from the lateral canthus to corner of the mouth (see Fig 20-6). The upper outer quadrant is the appropriate site for deep supraperiosteal injections.